The Doctrine OF INTEREST, BOTH *SIMPLE & COMPOUND*:

EXPLAINED
In a more exact and satisfactory Method then has hitherto been Published.

DISCOVERING
The Errors of the Ordinary Tables of *Rebate* for *Annuities* at *Simple Interest*.

AND CONTAINING
Tables for the *Interest* and *Rebate* of *Money* for *Days*, *Months*, and *Years*, both at *simple* and *Compound Interest*: Also *Tables* for the *Forbearance*, *Discompt*, and *Purchase* of *Annuities*.

AS LIKEWISE,
Equation of *Payments* made Practicable and useful for all Merchants and others.

Together with divers others useful Reflections.

Humbly Presented to His Most Sacred Majesty,
CHARLES II.
By Sir *S. Morland*, Knight and Baronet.

Printed at *London*, by *A. Godbid* and *J. Playford*, and are sold by *Robert Boulter*, at the *Turks-Head*, over against the *Royal-Exchange* in *Cornhill*, 1679.

2337:11

A neceſſary and uſeful

INTRODUCTION.

THe Author of this little Book hopes he has ſerved the Publick ſomewhat better than other *Arithmeticians*, who have gone before him, for the following Reaſons.

1. In that his Method is more plain and eaſie than that of other Men; and thoſe things which they have left intricate and difficult to be underſtood, are here made evident by clear Demonſtrations, obvious to the meaneſt capacity.

2. In that his Tables are Calculated with greater care, and are much more correct than those that have been Published of late years. For instance, all those Tables in Mr. *Newton*'s Book, Printed 1667, are full of Errors and mistakes; and which is very remarkable, the Tables which Mr. *Dary* has Published as his own, are only transcribed out of Mr. *Newton*'s Book, and that with all the Errors, which are so many, that they must needs mislead and discourage either young or old Practitioners from trusting to, or making use of them.

In Mr. *Clavel*'s Tables, which seem to be more correct than the others, there will be found many very considerable Errors. As for instance,

inſtance, if you would know what an *Annuity* of 600 *l.* to continue 21 years is worth in ready Money, you will find it there to be but 6058 : 08 : 11.034, which is too little by 1000 *l.* alſo if you would know the *Preſent Worth* of 60 *l. Annuity* for the like time (in the ſame Page that reſolves the former Queſtion) you will find but 605 : 16 : 10.703, which is leſs than the truth by 100 *l.*

Whereas in this little Book, by the more than ordinary care and diligence of Mr. *John Playford*, Printer, (whom I have found the moſt ingenious and dexterous of any of his Profeſſion, in Printing of Tables, and all ſorts of *Mathematical* Operations) it is preſumed

that there will hardly be found one falſe Figure; but if there ſhould, the Tables are ſo framed, that what the one does by Multiplication, the other proves by Diviſion, *& vice verſâ*, whatever the one performs by Diviſion, the other makes out by Multiplication to be a truth.

3. Becauſe the Operations according to the Rules and Tables of this little Book, where the Sums are great, are much more eaſie, practicable, and ſatisfactory, than by Mr. *Clavel*'s Tables; beſides that thoſe Tables do not anſwer very many uſeful Queſtions that will daily occur to Men of buſineſs.

For Example.

He has Tables for the *Amount* of any Sum to 10000 *l.* for 365 days, but he has no Tables of *Rebate* for ſo many days, which is full as uſeful as the other, not only in *Simple*, but alſo *Compound Intereſt*; ſo that the Practitioner muſt very often be forced to have recourſe to the Logarithms, or other tedious Calculations.

4. Becauſe all the Operations in this Book are performed by DECIMAL ARITHMETICK, which of all other is the moſt uſeful and Practicable, when well underſtood: And in order thereunto, the Author has here given ſeveral Examples, and explained the

the reſpective Operations in ſuch a manner, that any perſon who does at all underſtand the Vulgar Arithmetick, may in one hours time throughly comprehend this.

Addition and Subtraction of Decimals.

AS for the Operations of Addition and Subtraction, they are the very ſame with the Vulgar.

For Example.

To ——	375.42
Add ——	49.32
Sum ——	424.74

There

There must only care be had of setting Unites under Unites, and Fractions under Fractions, in their proper Ranks and Files; as likewise that there be as many places of Fractions in the Total, as are found in either of the Sums, before they are added together.

Thus:

To ———	375.42
Add ———	495.4
Sum ——	870.82

Or thus:

To ———	375.42
Add ———	95.03
Sum ——	470.45

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To ———	375.42
Add ———	495.4
Sum ——	870.82

Or thus:

To ———	375.42
Add ———	95.03
Sum ——	470.45

Again,

From ——	870.82
Deduct ——	495.4
Remainder —	375.42

Or,

From ——	470.45
Deduct ——	95.03
Remainder —	375.42

Multiplication of Decimals.

Rule.

SET one Number over another, (making only a Full-point to distinguish between Whole Numbers and Fractions) in the very same manner as is done in ordinary Multiplication, only when the Product is finished, look how many places of Fractions are found, both in the Multiplicand and Multiplicator jointly, just so many must be left in the Product.

For Example.

To multiply 342.34 by 3.123, place them thus:

Multiplicand ———	342.34
Multiplicator ———	3.123
	102702
	68468
	34234
	102702
Product ———	1069.12782

Explanation.

Becauſe in the *Multiplicand* there are two places of Fractions, and in the *Multiplicator* three, in all five;

five; therefore in the *Product* there muſt be alſo five places of Fractions.

Thus,

Multiply ——	.2342
By ——	32
	4684
	7026
Product ——	7.4944

Here the Practitioner is to obſerve, that the *Fraction* which is in truth leſs, is ſet over the whole Number, which is really greater. But becauſe the *Fraction* conſiſts of more places, it is ſet uppermoſt, though

though it is a thing indifferent, for if they were ſet otherwiſe, the Product would ſtill be the ſame.

For,

Multiply ——	32
By ——	.2342
	64
	128
	96
	64
The Product is ——	7.4944

Which is the very ſame as before.

By

By the same Reason,

Multiply	.0204
By	.0032
	0408
	0612
	0000
	0000
Product	.0006528

The Product must evermore be compleated, as to the number of places that are found in both *Multiplicand* and *Multiplicator*.

An excellent Method of Contracting a Long Multiplication.

1. IN the first place, wherever a Multiplication consists of above three places, the Author does recommend to all Practitioners (as a thing which he has sufficiently experienced to be the most safe and easie) to make use of a *Tariffa*, or Table of Multiplication for the *Multiplicand*: And though it may and will seem at the first view to be more tedious, yet it will be found to be the shortest of all other ways whatsoever, being performed by Addition only, and less subject

ſubject to error; and not only ſo, but whereas all other Operations of Multiplication do extreamly diſtort the Eyes by looking ſtedfaſtly upon Figures placed Diagonally, by this *Tariffa* the Eye looks on them always in a ſtreight Line, and no otherwiſe.

For Example.

Suppoſe the two Sums to be multiplied one by another were 259879.890625, and 1.1173698, but the Product to conſiſt of no more than Eleven places.

Tariffa for the Multiplicand.	
1	2598798906 25
2	5197597812 50
3	7796396718 75
4	1039519562 500
5	1299399453 125
6	1559279343 750
7	1819159234 375
8	2079039125 000
9	2338919015 625

Having made a *Tariffa*, and placed the *Multiplicand* and *Multiplicator* as is before directed, becauſe in the *Multiplicand* there are twelve places, and eight in the *Multiplicator*, in all twenty places; and it

it is desired to contract them to eleven places. First let a Line be drawn, leaving eight places to the right hand; and then let all the imaginary places underneath be supplied with Points or Cyphers, decreasing in a Triangular Figure to nothing.

Then let the *Multiplication* be performed as follows.

Let the last Figure in the *Multiplicator* be found in the Margin of the *Tariffa*, and the Product answering to it subscribed, only let eight places be imaginary according to the number of Points or Cyphers, and let the remaining Figures (*viz.* 20790) be transcribed on the other side of the Line.

Under the next Figure of the *Multiplicator* (9), are ſeven Points or Cyphers, therefore the Product anſwering to (9) in the Margin of the *Tariffa* being found, *viz.* 233891|9015625, let the firſt ſeven Figures to the right hand be left, and the other ſix inſcribed, as in the Example is better ſeen.

And thus muſt the Operation be performed, 'till all be finiſhed; and conſidering that there are eight ſeveral Products, it may be well imagined, that at leaſt (2) muſt be carried from the laſt place; and therefore (2) being added to (27) there muſt be ſet down (9), and (2) carried to the next place; and thus muſt be wrought the whole Multiplication,

and

and at last it gives the Product, as is here-under expresst, *viz.*

259879.890625
1.1173698

20790	.....
233891	.....
1559279	.....
7796396	.....
181915923	....
2598798890	...
25987989062	..
259879890625	.
Product 290381.94139	

And after this manner may any Multiplication be contracted to any number of places, more or less.

DIVI-

Diviſion of Decimals.

IN Diviſion of *Decimals*, the greateſt difficulty is to know of what nature the firſt Figure or Cypher in the *Quotient* ought to be, for that being once known, all other things are the very ſame as in the ordinary Operation of Diviſion.

And therefore I ſhall give this General Rule, for the finding of what nature or quality the firſt Figure or Cypher of any Quotient in a Decimal Operation ought to be.

Gene-

General Rule.

The first Figure in the Quotient must and will always be of the same nature and quality with that Figure or Cypher in the Dividend, which at the first Question stands over the place of Unites in the Divisor.

Example 1.

Let 7.4944 be given to be divided by 32.

By the foregoing Rule, because the Figure (4) of the Dividend stands over the Unite (2) of the Divisor, and the Figure (4) is

a Fraction; therefore the first Figure of the Quotient (*viz.* 2) must be a Fraction, and have a Point prefixed.

And then all the other Figures of the Quotient follow in course, as in the ordinary Method of Division.

Tariffa.	
1	32
2	64
3	96
4	128
5	160
6	192
7	224
8	256
9	288

Divid. 7.4944 (.2342 Quo.
Divis. 32
64
109
96
134
128
64
64
00

Example

Example 2.

Divid.—.0006528 (.0032 Quot.
Diviſor —.0204
612
408
408
000

Direction.

In this laſt Example, becauſe the *Diviſor* may not be placed under the firſt Figure of the *Dividend*, nor indeed under the ſecond, therefore are two Cyphers put firſt in the *Quotient*, but under the third Figure it may be ſet, and then .0204 is found three times in 0652,

and 40 over; then bringing down (8), and adding it to 40, makes the Product (408), which is just the double of (204) which gives (2) for the last Figure of the Quotient.

And after this manner may any Division be wrought, without the least difficulty or uncertainty.

Example 3.

Let .0006258 be the *Dividend*, and .0032 the *Divisor*.

Here must be a remove before the *Divisor* will come under the the *Dividend*, which is the occasion of putting one Cypher in the *Quotient*, before the Figure (2).

Tariffa.	
1	0032
2	0064
3	0096
4	0128
5	0160
6	0192
7	0224
8	0256
9	0288

Dividend .0006528 (.0204 Quo.
Diviſor — .0032
64
128
128
000

and 40 over; then bringing down (8), and adding it to 40, makes the Product (408), which is just the double of (204) which gives (2) for the last Figure of the Quotient.

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Tariffa.	
1	0032
2	0064
3	0096
4	0128
5	0160
6	0192
7	0224
8	0256
9	0288

Dividend .0006528 (.0204 Quo.
Diviſor — .0032
64
128
128
000

Again,

Let the Numbers in the firſt Example be given thus:

Quot.

Dividend 32.0000(4.2698

Diviſor — 7.4944

299776

202240

149888

523520

449664

738560

674496

640640

599552

41088

Tariffa.	
1	74944
2	149888
3	224832
4	299776
5	374720
6	449664
7	524608
8	599552
9	674496

Expla-

Explanation of the foregoing Examples.

Explanation of the first Example.

IN the first Example a leſs Number 7.4944 is divided by a greater, *viz.* 32.

The young Practitioner will preſently object, and demand how this can be, for to divide one Number by another, is to demand how many times that other Number is found in the firſt; that is, in this caſe, how many times 32 is found in 7 Integers, and a Fraction of .4944.

Expla-

Explanation.

The Anſwer in plain *Engliſh* is this:

Firſt, 32 is not found ſo much as once in 7, and that is the reaſon of the Full-point (.) in the Quotient, before the Figures of the Fraction, to ſignifie, that the whole Quotient conſiſts of Decimal Parts.

Secondly, the firſt Figure of the Fraction being (2) denotes this, namely that 32 comes no nearer, being found in 7.49, *&c.* than $\frac{2}{10}$, or two Tenths of once, or one time; that is to ſay, it comes no nearer than 2 is to 10.

And the ſecond Figure of the Quotient (3) gives to underſtand,

ſtand, that 32 comes no nearer, being found in 7.49, &c. ſo much as once, or one time, than $\frac{23}{100}$, or Twenty three Hundred parts; that is to ſay, no nearer than 23 is to 100.

And (4) the third Figure goes farther, and ſays, that 32 comes no nearer, being found once, or one time, in 7.49, &c. than $\frac{234}{1000}$, or Two Hundred thirty four Thouſand parts; that is to ſay, no nearer than 234 is to 1000.

And the laſt Figure determining the Queſtion, yet ſomewhat more exactly; that is to ſay, denotes that 32 comes no nearer, being found ſo much as once in 7.4944, than $\frac{2342}{10000}$; that is, no nearer than 2342 is to 10000.

Expla-

Explanation of the ſecond Example.

IN the ſecond Example likewiſe a leſs Number ſeems to be divided by a greater, *viz.* .0006528 by .0204, and alſo (in the third Example) by .0032; and an Explanation of one of theſe may ſerve for both.

And the true meaning is,

1. Firſt .0032 cannot be found once in .0006528, therefore is a Point prefixed before the Quotient.

2. The firſt Cypher denotes that .0032 comes not ſo near, being found once in .0006528, as $\frac{1}{10}$, or one Tenth; that is, not ſo near as 1 to 10.

3. The

3. The ſecond Cypher tells the Practitioner that it comes not ſo near as $\frac{1}{100}$, or as 1 to 100.

4. The Figure (3) in the third place, acquaints him, that 32 is no nearer, being found once in .000652 8, than $\frac{1}{1000}$, that is, Three parts of a Thouſand, or no nearer than 3 is to 1000.

And the laſt Figure in the Quotient, (*viz.* 2) ſignifies that 32 is no nearer, being found once in .000652 8, than $\frac{1}{10000}$; that is to ſay, no nearer than 32 is to 10000.

And this Myſtery being once throughly comprehended, and digeſted by the young Practitioner, there can be no farther difficulty, about a leſs Number being divided by a greater.

5. In the fifth and laſt place, by this little Book may be compared together the Operations of *Simple* and *Compound Intereſt*, and ſo may be diſcovered how erroneous and extravagant the one is, and how true and rational the other, and only fit to be made uſe of by all thoſe who deal in matters of Money, or Purchaſes, which that the Reader may better comprehend, let him conſider well the following Animadverſions, or Reflections.

Reflecti-

Reflections upon *Simple* and *Compound Intereſt.*

Reflection I.

LEt there be propoſed an *Annuity* of 100 *l.* to be continued 10, 20, 30, 40, 50, 60, 70, 80, 90, or 100 Years, and let it be demanded, what the *Preſent Worth* of ſuch an *Annuity* is for any of the following Terms, at the Rate of 6 *per Cent.* and that as well according to *Simple* as *Compound Intereſt?*

Answer.

An *Annuity* of 100 *l.* to continue for 10, 20, 30, 40, 50, 60, 70, 80, 90, or 100 Years, is worth in present Money so many Years Purchase as is hereafter expreſt, *viz.*

Number of Years to be continued.	*Years Purchaſe, at Simple Intereſt.*	*Years Purchaſe, at Compound Intereſt.*
10	7.93	7.35
20	14.27	11.46
30	20.03	13.76
40	25.52	15.01
50	30.87	15.72
60	36.13	16.16
70	41.32	16.38
80	46.48	16.50
90	51.60	16.57
100	56.71	16.61

By

By which Table it is very obſervable, what a ſmall difference there is at *Compound Intereſt*, between the *Preſent Worth* of 50 Years, and the *Preſent Worth* of 100 Years, (*viz.* 00.$\frac{43}{100}$) in compariſon with the difference between 50 and 100 Years, at *Simple Intereſt*, (*viz.* 25 Years Purchaſe, more by $\frac{44}{100}$) the one not exceeding 16 Years Purchaſe, more by $\frac{41}{100}$; and the other ſtill increaſing as far as almoſt 57 Years Purchaſe; and if continued to a greater Number of Years, would ſtill ſwell into an extravagant Sum, for the Purchaſe, Treble, or Quadruple, to the uſual Rate of Purchaſes in the Kingdom where we live.

Reflection

Reflection II.

FOr as much as it is a truth received by all, That the Purchaſe of an Eſtate or Revenue for ever, in moſt places of *England*, is not worth above 20 Years Purchaſe, and that to be computed according to *Compound Intereſt*, which is made up of ſo many *Geometrical Proportional Numbers*: What reaſon can there be given, why the *Preſent Worth* of any Payment, due at any time hereafter, ſhould not be computed by the ſame proportion, although the Payment be but for a *Year*, nay, for a *Day*, or *Hour*, or *Minute* to come?

Thus

Thus, according to the Rate of *Compound Intereſt*, the Purchaſe of an Eſtate for 30 years to come, at 4 *per Cent.* is worth 17 years Purchaſe, and ſomewhat more; at 5 *per Cent.* is worth 15 years Purchaſe, more by $\frac{11}{100}$; at 6 *per Cent.* is worth 13 years Purchaſe, more by $\frac{13}{100}$. The ſame Eſtate for 20 years to come, at 4 *per Cent.* is worth 13 years and a half Purchaſe, and ſomewhat more; and for 10 years to come, is worth above 8 years Purchaſe; and for two years to come, is worth one years Purchaſe, more by $\frac{11}{100}$; and all theſe Numbers are Calculated as *Geometrical Proportionals*: Why then ſhould the ſame Eſtate, for a *Year*, or 6 *Months* to come, be Calculated by any other Proportion?

portion? Or indeed, how can it be rightly Calculated by any other Proportion, without doing wrong to either Buyer or Seller?

Reflection III.

Compound Intereſt being made up of *Geometrical Proportionals*, the Debtor ought not really to pay after the Rate of 30 *s.* a Quarter for 100 *l.* let out to him at 6 *per Cent.* becauſe, if 100 *l.* be put out to Intereſt, and the Intereſt come to 1 *l.* 10 *s.* the firſt Quarter, that 101 *l.* 10 *s.* by the end of the next Quarter (keeping to *Geometrical Proportion*) will become 103 *l.* 5 *d.* 1 *q.* more by $\frac{22}{100}$ of a Farthing; that is to ſay, 100 *l.* after

after this manner, would amount in a years time to 106*l.* 2*s.* 8*d.* 2*q.* more by Ninety Hundred parts of a Farthing, as may be seen by the following Calculation.

First Quarter — 101.500000
Second Quarter 103.022500
Third Quarter 104.567837
Fourth Quarter 106.136355

Which in a great Sum is more considerable.

For suppose the Crown to be indebted 1 Million, or (1000000*l.*) and it were agreed to pay at the Rate of 30*s.* for each 100 *l.* the first Quarter, and it were not paid 'till the Twelve Months end; the Amount would be as follows.

First Quarter — 1015000.00
Second Quarter 1030225.00
Third Quarter 1045678.37
Fourth Quarter 1061363.55

Which at the years end amounts to 60000 *l.* (which ought to be the Total Sum of the Intereſt for 12 Months, at 6 *per Cent.*) and over and above the ſaid 60000 *l.* there is 1363 *l.* 11 *s.* which 1 Million according to ſuch an Accompt, if put out for a year, would amount to: So that in effect this is not 6 *per Cent.* but 6 *l.* 2 *s.* 8 *d.* 2 *q.* Ninety Hundred parts of a Farthing *per Cent.* For he who lends Money, if ſo ſoon as the firſt Quarters Intereſt grows due, and the Creditor pay it not at the juſt time, (if he ſo pleaſe) obliges the Creditor to acknow-

acknowledge ſo much Principal, and then it increaſes as aforeſaid.

Divers other Reflections of this kind might be made, and applied to the manifold abuſes that may be committed, by Selling according to one Rate of *Intereſt*, and Buying by another, and ſo confounding together *Simple* and *Compound Intereſt*, as it makes moſt for the advantage of the Money Merchant, there being very few ſo well verſed in Numbers as to contradict them. The truth is, it is as great pity that there ſhould be two ſo different Calculations of *Intereſt*, as that there ſhould be ſo many different *Weights* and *Meaſures*, and thoſe divided and ſubdivided into ſo many Heterogeneous Fractions, which muſt of neceſſity create to

all Dealers innumerable difficulties; whereas if *Coyns*, *Weights*, and *Meaſures*, were divided and ſubdivided by *Decimals*, all Calculations would be performed with eaſe and pleaſure.

For Inſtance,

If a *Pound* were divided into 10 *Shillings*, a *Shilling* into 10 *Pence*, and a *Peny* into 10 *Farthings*, and only a Point to diſtinguiſh *Integers* from *Fractions*; then the following Sum would eaſily be added together, *viz.*

l.	*s.*	*d.*	*q.*
15	9	6	1
39	8	3	0
48	7	2	1

For

For they might be ſet down thus :

15.961
39.830
48.721
104.512

That is to ſay, the Sum would be 104 *Pound*, 5 *Shillings*, 1 *Peny*, and 2 *Farthings*.

Or if theſe were *Weights*, they might be,

104 *Pound-weight*, 5 *Ounces*, 1 *Dram*, 2 *Scruples*.

And after this manner might all Calculations be abbreviated, and

and made much more practicable than now they are, especially the Operations of *Multiplication* and *Division*.

For to multiply 48 *l.* 7 *s.* 2 *d.* 2 *q.* as they are now divided, by 124, is very troublesom, and requires many Operations, both of *Multiplication* and *Division*; but in a *Decimal* way, it would be plain and easie by one single *Multiplication*, *viz.*

48.722
124
194888
97444
48722
6041.528

That

That is to ſay, 6041 *Pound*, 5 *Shillings*, 2 *Pence*, and 8 *Farthings*.

The convenience and expedition would yet be greater in *Long* and *Square* Meaſures; and all former Accompts by unequal Diviſions, might for the preſent be reconciled and reduced to *Decimals*, and in a few years utterly forgotten, and become altogether uſeleſs.

But for as much as a private Perſon can only give hints of what he conceives to be of publick uſe and benefit, and that it is a thing wholly in the Power of thoſe who are Lawmakers, to inſpect and rectifie what

what they in their great Wiſdom ſhall judge amiſs; the AUTHOR does in all Humility lay by his Pen, and puts a period to his Diſcourſe upon this Subject.

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THE

THE DOCTRINE OF *SIMPLE INTEREST* EXPLAINED

By a New and Exact Method,

And the Errors *of the Ordinary Rules and Tables of* Rebate *discovered and rectified.*

CHAP. I.

INtereſt is either *Simple*, or *Compound*.

1. *Simple Intereſt*, is the Increaſe which ariſes from the Principal only, at 4, 5, 6, 7, &c. *per* Cent.

2. *Compound Intereſt*, is the Increaſe which ariſes from the Principal, and alſo from the Intereſt thereof.

Thus, if 100 *l.* be lent at *Simple Intereſt* for Two Years, at *6 per Cent.* the Increaſe thereof is 12 *l.* But if at *Compound Intereſt*, it gives *6 l.* for the firſt Year, and *6 l.* for the ſecond Year, together with the Intereſt of the firſt *6 l.* for the ſecond Year. That is to ſay:

	l.
For the firſt Year —— ——	6.00
For the ſecond Year —— ——	6.00
And for the Intereſt of the firſt *6 l.* for the 2d Year	0.36
Total Sum	12.36

To which adding the Principal (*viz.* 100 *l.*) the Amount of both Principal and *Compound Intereſt*, for Two years, is 112.36 *l.* which by the Table of *Reduction* in the following Page is 112 *l.* 7 *s.* 2 *d.* 1 *q.* more by .000626 parts of a Pound.

The Doctrine of *Simple Intereſt* is plainly and clearly ſet forth in the following Propoſitions.

But that the Practitioner may meet with no difficulty in the reſpective Operations, he will here find made ready to his hand Seven ſhort (but very ſignificant) Tables.

TA-

TABLE I.

Reduction of **Shillings**, **Pence**, and **Farthings**, into Decimal Fractions.

Shillings.	*Decimals.*
19	.95
18	.9
17	.85
16	.8
15	.75
14	.7
13	.65
12	.6
11	.55
10	.5
9	.45
8	.4
7	.35
6	.3
5	.25
4	.2
3	.15
2	.1
1	.05

Pence.	*Decimals.*
11	.0458333
10	.0416666
9	.0375
8	.033333
7	.0291666
6	.025
5	.0208333
4	.0166666
3	.0125
2	.0083333
1	.0041666

Farth.	*Decimals.*
3	.003125
2	.0020833
1	.0010416
½	.0005208
¼	.0002604
⅛	.0001302

TABLE II.

The INTEREST of One Pound for One Year.

From 1 *to* 12 per Cent.

Rates per Cent.	*Interest.*
1	.01
2	.02
3	.03
4	.04
5	.05
6	.06
7	.07
8	.08
9	.09
10	.10
11	.11
12	.12

TA-

TABLE III.

The INTEREST of One Pound for One Half-Year.

From 1 *to* 12 per Cent.

Rates per Cent.	*Interest.*
1	.005
2	.01
3	.015
4	.02
5	.025
6	.03
7	.035
8	.04
9	.045
10	.05
11	.055
12	.06

TA-

TABLE IV.

The INTEREST of One Pound for One Quarter.

From 1 *to* 12 per Cent.

Rates per Cent.	*Intereſt.*
1	.0025
2	.005
3	.0075
4	.01
5	.0125
6	.015
7	.0175
8	.02
9	.0225
10	.025
11	.0275
12	.03

TA-

TABLE V.

The INTEREST of One Pound for One Month.

From 1 *to* 12 per Cent.

Rates per Cent.	*Intereſt.*
1	.0008333
2	.0016666
3	.0025
4	.00333
5	.00416
6	.005
7	.00583
8	.00666
9	.0075
10	.08333
11	.09166
12	.1

TA-

TABLE VI.

The INTEREST of One Pound for One Day.

From 1 *to* 12 per Cent.

Rates per Cent.	*Interest.*
1	.00002739726
2	.00005479452
3	.00008219178
4	.00010958904
5	.00013698630
6	.00016438356
7	.00019178082
8	.00021917808
9	.00024657534
10	.00027397260
11	.00030136986
12	.00032876712

TA-

TABLE VII.

THE *GOLDEN TABLE* OF Trigonal Progression.

Of excellent use, in all Calculations of the Amount or present Worth of *Annuities*, &c.

Arith. Prog.	*Trigonal Prog.*	*Arith. Prog.*	*Trigonal Prog.*
1	1	10	55
2	3	11	66
3	6	12	78
4	10	13	91
5	15	14	105
6	21	15	120
7	28	16	136
8	36	17	153
9	45	18	171

Arith. Prog.	*Trigonal Prog.*	*Arith. Prog.*	*Trigonal Prog.*
19	190	40	820
20	210	41	861
21	231	42	903
22	253	43	946
23	276	44	990
24	300	45	1035
25	325	46	1081
26	351	47	1128
27	378	48	1176
28	406	49	1225
29	435	50	1275
30	465	51	1326
31	496	52	1378
32	528	53	1431
33	561	54	1485
34	595	55	1540
35	630	56	1596
36	666	57	1653
37	703	58	1711
38	741	59	1770
39	780	60	1830

Arith. Prog.	*Trigonal Prog.*	*Arith. Prog.*	*Trigonal Prog.*
61	1891	82	3403
62	1953	83	3486
63	2016	84	3570
64	2080	85	3655
65	2145	86	3741
66	2211	87	3828
67	2278	88	3916
68	2346	89	4005
69	2415	90	4095
70	2485	91	4186
71	2556	92	4278
72	2628	93	4371
73	2701	94	4465
74	2775	95	4560
75	2850	96	4656
76	2926	97	4753
77	3003	98	4851
78	3081	99	4950
79	3160	100	5050
80	3240	101	5151
81	3321	102	5253

Arith. Prog.	*Trigonal Prog.*
103	5356
104	5460
105	5565
106	5671
107	5778
108	5886
109	5995
110	6105
111	6216
112	6328
113	6441
114	6555
115	6670
116	6786
117	6903
118	7021
119	7140
120	7260
121	7381
122	7503
123	7626
124	7750

TABLE VIII.

A *TABLE*

SHEWING

The Number of Days *from the Beginning of any* Month *to the End of any other.*

January, 31. *February*, 59. *March*, 90. *April*, 120. *May*, 151. *June*, 181. *July*, 212. *Auguſt*, 243. *September*, 273. *October*, 304. *November*, 334. *December*, 365.

February, 28. *March*, 59. *April*, 89. *May*, 120. *June*, 150. *July*, 181. *Auguſt*, 212. *September*, 242. *October*, 273. *Novemb.* 303. *Decemb.* 334. *Jan.* 365.

March, 31. *April*, 61. *May*, 92. *June*, 122. *July*, 153. *Auguſt*, 184. *September*, 214. *Octob.* 245. *Novemb.* 275. *Decemb.* 306. *Jan.* 337. *Febr.* 365.

April,

April, 30. *May*, 61. *June*, 91. *July*, 122. *August*, 153. *September*, 183. *October*, 214. *November*, 244. *December*, 275. *January*, 306. *February* 334. *March*, 365.

May, 31. *June*, 61. *July*, 92. *August*, 123. *September*, 153. *October*, 184. *November*, 214. *December*, 245. *Jan.* 276. *February*, 304. *March*, 335. *April*, 365.

June, 30. *July*, 61. *August*, 92. *September*, 122. *October*, 153. *Novemb.* 183. *December*, 214. *January*, 245. *Febr.* 273. *March*, 304. *April*, 334. *May*, 365.

July, 31. *August*, 62. *September*, 92. *October*, 123. *Novemb.* 153. *Decemb.* 184. *January*, 215. *February*, 243. *March*, 274. *April*, 304. *May*, 335. *June*, 365.

August, 31. *September*, 61. *Octob.* 92. *November*, 122. *December*, 153. *January*, 184. *February*, 212. *March*, 243. *April*, 273. *May*, 304. *June*, 334. *July*, 365.

Sep=

September, 30. *October*, 61. *November*, 91. *December*, 122. *January*, 153. *February*, 181. *March*, 212. *April*, 242. *May*, 273. *June*, 303. *July*, 334. *Aug.* 365.

October, 31. *November*, 61. *Decemb.* 92. *January*, 123. *February*, 151. *March*, 182. *April*, 212. *May*, 243. *June*, 273. *July*, 304. *Auguſt*, 335. *September*, 365.

November, 30. *December*, 61. *January*, 92. *February*, 120. *March*, 151. *April*, 181. *May*, 212. *June*, 242. *July*, 273. *Aug.* 304. *Sept.* 334. *Octob.* 365.

December, 31. *January*, 62. *February*, 90. *March*, 121. *April*, 151. *May*, 182. *June*, 212. *July*, 243. *Auguſt*, 274. *September*, 304. *October*, 335. *Novemb.* 365.

Note, That in every Leap-year, *February* has 29 Days, and then you muſt allow a Day more than is here computed for that Month.

TA-

TABLE IX.

The Amount of One Pound, put out to *Interest*, and forborn any Number of *Years* under 32.

At the Rate of 6 per Cent. Simple Interest; And that Interest payable Yearly.

Years.	*Amount.*	*Years.*	*Amount.*
1	1.06	17	2.02
2	1.12	18	2.08
3	1.18	19	2.14
4	1.24	20	2.20
5	1.30	21	2.26
6	1.36	22	2.32
7	1.42	23	2.38
8	1.48	24	2.44
9	1.54	25	2.50
10	1.60	26	2.56
11	1.66	27	2.62
12	1.72	28	2.68
13	1.78	29	2.74
14	1.84	30	2.80
15	1.90	31	2.86
16	1.96		

TA-

TABLE X.

The AMOUNT of **One Pound**; for any Number of equal **Months** under 25.

At the Rate of 6 per Cent. Simple Intereſt.

Months.	*Amount.*	*Months.*	*Amount.*
1	1.005	13	1.065
2	1.010	14	1.070
3	1.015	15	1.075
4	1.020	16	1.080
5	1.025	17	1.085
6	1.030	18	1.090
7	1.035	19	1.095
8	1.040	20	1.100
9	1.045	21	1.105
10	1.050	22	1.110
11	1.055	23	1.115
12	1.060	24	1.120

TABLE XI.

The AMOUNT of One Pound, for any Number of Days under 366.

At the Rate of 6 per Cent. Simple Interest.

Days.	Amount.	Days.	Amount.
1	1.000164383	17	1.002794520
2	1.000328767	18	1.002958904
3	1.000493150	19	1.003123287
4	1.000657534	20	1.003287671
5	1.000821917	21	1.003452054
6	1.000986301	22	1.003616438
7	1.001150684	23	1.003780821
8	1.001315068	24	1.003945205
9	1.001479452	25	1.004109589
10	1.001643835	26	1.004273972
11	1.001808219	27	1.004438356
12	1.001972602	28	1.004602739
13	1.002136986	29	1.004767123
14	1.002301369	30	1.004931506
15	1.002465753	31	1.005095890
16	1.002630136	32	1.005260273

Days.	*Amount.*	*Days.*	*Amount.*
33	1.005424657	55	1.009041095
34	1.005589041	56	1.009205479
35	1.005753424	57	1.009369862
36	1.005917808	58	1.009534246
37	1.006082191	59	1.009698630
38	1.006246575	60	1.009863013
39	1.006410958	61	1.010027397
40	1.006575342	62	1.010191780
41	1.006739725	63	1.010356164
42	1.006904109	64	1.010520547
43	1.007068493	65	1.010684931
44	1.007232876	66	1.010849314
45	1.007397260	67	1.011013698
46	1.007561643	68	1.011178082
47	1.007726027	69	1.011342465
48	1.007890410	70	1.011506849
49	1.008054794	71	1.011671232
50	1.008219178	72	1.011835616
51	1.008383561	73	1.011999999
52	1.008547945	74	1.012164383
53	1.008712328	75	1.012328767
54	1.008876712	76	1.012493150

Days.	*Amount.*	*Day.*	*Amount.*
77	1.012657534	99	1.016273972
78	1.012821917	100	1.016438356
79	1.012986301	101	1.016602739
80	1.013150684	102	1.016767123
81	1.013315068	103	1.016931506
82	1.013479451	104	1.017095890
83	1.013643835	105	1.017260273
84	1.013808219	106	1.017424657
85	1.013972602	107	1.017589040
86	1.014136986	108	1.017753424
87	1.014301369	109	1.017917808
88	1.014465753	110	1.018082191
89	1.014630136	111	1.018246575
90	1.014794520	112	1.018410958
91	1.014958903	113	1.018575342
92	1.015123287	114	1.018739725
93	1.015287671	115	1.018904109
94	1.015452054	116	1.019068492
95	1.015616438	117	1.019232876
96	1.015780821	118	1.019397260
97	1.015945205	119	1.019561643
98	1.016109588	120	1.019726027

Day.	*Amount.*	*Day.*	*Amount.*
121	1.019890410	143	1.023506849
122	1.020054794	144	1.023671232
123	1.020219177	145	1.023835616
124	1.020383561	146	1.023999999
125	1.020547945	147	1.024164383
126	1.020712328	148	1.024328766
127	1.020876712	149	1.024493150
128	1.021041095	150	1.024657534
129	1.021205479	151	1.024821917
130	1.021369862	152	1.024986301
131	1.021534246	153	1.025150684
132	1.021698629	154	1.025315068
133	1.021863013	155	1.025479451
134	1.022027397	156	1.025643835
135	1.022191780	157	1.025808218
136	1.022356164	158	1.025972602
137	1.022520547	159	1.026136986
138	1.022684931	160	1.026301369
139	1.022849314	161	1.026465753
140	1.023013698	162	1.026630136
141	1.023178081	163	1.026794520
142	1.023342465	164	1.026958903

Day	Amount.	Day	Amount.
165	1.027123287	187	1.030739725
166	1.027287670	188	1.030904109
167	1.027452054	189	1.031068492
168	1.027616438	190	1.031232876
169	1.027780821	191	1.031397259
170	1.027945205	192	1.031561643
171	1.028109588	193	1.031726027
172	1.028273972	194	1.031890410
173	1.028438355	195	1.032054794
174	1.028602739	196	1.032219177
175	1.028767123	197	1.032383561
176	1.028931506	198	1.032547944
177	1.029095890	199	1.032712328
178	1.029260273	200	1.032876712
179	1.029424657	201	1.033041095
180	1.029589040	202	1.033205479
181	1.029753424	203	1.033369862
182	1.029917807	204	1.033534246
183	1.030082191	205	1.033698629
184	1.030246575	206	1.033863013
185	1.030410958	207	1.034027396
186	1.030575342	208	1.034191780

Day.	*Amount.*	*Day.*	*Amount.*
209	1.034356164	231	1.037972602
210	1.034520547	232	1.038136985
211	1.034684931	233	1.038301369
212	1.034849314	234	1.038465753
213	1.035013698	235	1.038630136
214	1.035178081	236	1.038794520
215	1.035342465	237	1.038958903
216	1.035506848	238	1.039123287
217	1.035671232	239	1.039287670
218	1.035835616	240	1.039452054
219	1.036000000	241	1.039616437
220	1.036164383	242	1.039780821
221	1.036328766	243	1.039945205
222	1.036493150	244	1.040109588
223	1.036657533	245	1.040273972
224	1.036821917	246	1.040438355
225	1.036986301	247	1.040602739
226	1.037150684	248	1.040767122
227	1.037315068	249	1.040931506
228	1.037479451	250	1.041095890
229	1.037643835	251	1.041260273
230	1.037808218	252	1.041424657

Day.	*Amount.*	*Day.*	*Amount.*
253	1.041589040	275	1.045205479
254	1.041753424	276	1.045369862
255	1.041917807	277	1.045534246
256	1.042082191	278	1.045698629
257	1.042246574	279	1.045863013
258	1.042410958	280	1.046027396
259	1.042575342	281	1.046191780
260	1.042739725	282	1.046356163
261	1.042904109	283	1.046520547
262	1.043068492	284	1.046684931
263	1.043232876	285	1.046849314
264	1.043397259	286	1.047013698
265	1.043561643	287	1.047178081
266	1.043726026	288	1.047342465
267	1.043890410	289	1.047506848
268	1.044054794	290	1.047671232
269	1.044219177	291	1.047835615
270	1.044383561	292	1.048000000
271	1.044547944	293	1.048164383
272	1.044712328	294	1.048328766
273	1.044876711	295	1.048493150
274	1.045041095	296	1.048657533

Days.

Day.	*Amount.*	*Day.*	*Amount.*
297	1.048821917	319	1.052438355
298	1.048986300	320	1.052602739
299	1.049150684	321	1.052767122
300	1.049315068	322	1.052931506
301	1.049479451	323	1.053095889
302	1.049643835	324	1.053260273
303	1.049808218	325	1.053424657
304	1.049972602	326	1.053589040
305	1.050136985	327	1.053753424
306	1.050301369	328	1.053917807
307	1.050465752	329	1.054082191
308	1.050630136	330	1.054246574
309	1.050794520	331	1.054410958
310	1.050958903	332	1.054575341
311	1.051123287	333	1.054739725
312	1.051287670	334	1.054904109
313	1.051452054	335	1.055068492
314	1.051616437	336	1.055232876
315	1.051780821	337	1.055397259
316	1.051945204	338	1.055561643
317	1.052109588	339	1.055726026
318	1.052273972	340	1.055890410

Day.	*Amount.*	*Day.*	*Amount.*
341	1.056054793	354	1.058191780
342	1.056219177	355	1.058356163
343	1.056383561	356	1.058520547
344	1.056547944	357	1.058684930
345	1.056712328	358	1.058849314
346	1.056876711	359	1.059013698
347	1.057041095	360	1.059178081
348	1.057205478	361	1.059342465
349	1.057369862	362	1.059506848
350	1.057534246	363	1.059671232
351	1.057698629	364	1.059835615
352	1.057863013	365	1.060000000
353	1.058027396		

TABLE XII.

The PRESENT WORTH of **One Pound**, due after any Number of **Years** to come, under 32.

At the Rate of 6 per Cent. Simple Intereſt.

Years to come.	*Preſent Worth.*
1	.94339622
2	.89285714
3	.84745762
4	.80645161
5	.76923076
6	.73529411
7	.70422535
8	.67567567
9	.64935064
10	.62500000
11	.60240963
12	.58139534

Years to come.	*Present Worth.*
13	.56179775
14	.54347826
15	.52631578.
16	.51020408
17	.49504950
18	.48076923
19	.46728971
20	.45454545
21	.44247787
22	.43103448
23	.42016806
24	.40983606
25	.40000000
26	.39062500
27	.38167939
28	.37313432
29	.36496350
30	.35714285
31	.34965034

TABLE

TABLE XIII.

The PRESENT WORTH of **One Pound**, due after the expiration of any Number of **Months** under 25.

At the Rate of 6 per Cent. Simple Intereſt.

Months to come.	*Preſent Worth.*
1	.99502487
2	.99009900
3	.98522167
4	.98039215
5	.97560975
6	.97087378
7	.96618357
8	.96153846
9	.95693779
10	.95238095
11	.94786729
12	.94339622

Months

Months to come.	*Present Worth.*
13	.93896713
14	.93457943
15	.93023255
16	.92594444
17	.92165898
18	.91743119
19	.91324200
20	.90909090
21	.90497737
22	.90090090
23	.89686098
24	.89285714

TABLE

TABLE XIV.

The PRESENT WORTH of **One Pound**, due after the expiration of any Number of **Days** under 366.

At the Rate of 6 per Cent. Simple Intereſt.

Days to come.	*Preſent Worth.*	*Days to come.*	*Preſent Worth.*
1	.99983564	11	.99819504
2	.99967134	12	.99803128
3	.99950709	13	.99786757
4	.99934290	14	.99770391
5	.99917876	15	.99754031
6	.99901467	16	.99737676
7	.99885064	17	.99721326
8	.99868666	18	.99704982
9	.99852273	19	.99688643
10	.99835886	20	.99672310

Days to come.	Present Worth.	Days to come.	Present Worth.
21	.99655982	40	.99346761
22	.99639659	41	.99330539
23	.99623341	42	.99314323
24	.99607029	43	.99298112
25	.99590723	44	.99281906
26	.99574421	45	.99265706
27	.99558125	46	.99249511
28	.99541835	47	.99233321
29	.99525549	48	.99217136
30	.99509269	49	.99200957
31	.99492994	50	.99184782
32	.99476725	51	.99168614
33	.99460460	52	.99152450
34	.99444201	53	.99136292
35	.99427948	54	.99120139
36	.99411700	55	.99103991
37	.99395457	56	.99087848
38	.99379220	57	.99071711
39	.99362987	58	.99055579

Days to come.	*Present Worth.*	*Days to come.*	*Present Worth.*
59	.99039453	78	.98734040
60	.99023331	79	.98718018
61	.99007215	80	.98702001
62	.98991104	81	.98685989
63	.98975000	82	.98669983
64	.98958899	83	.98653980
65	.98942804	84	.98637984
66	.98926714	85	.98621993
67	.98910629	86	.98606008
68	.98894549	87	.98590027
69	.98878475	88	.98574052
70	.98862406	89	.98558081
71	.98846341	90	.98542116
72	.98830283	91	.98526156
73	.98814230	92	.98510202
74	.98798181	93	.98494253
75	.98782138	94	.98478309
76	.98766100	95	.98462369
77	.98750067	96	.98446435

Days to come.	*Present Worth.*	*Days to come.*	*Present Worth.*
97	.98430506	116	.98128830
98	.98414582	117	.98113004
99	.98398663	118	.98097183
100	.98382749	119	.98081367
101	.98366841	120	.98065556
102	.98350937	121	.98049750
103	.98335039	122	.98033949
104	.98319146	123	.98018152
105	.98303258	124	.98002361
106	.98287376	125	.97986576
107	.98271498	126	.97970795
108	.98255626	127	.97955020
109	.98239758	128	.97939250
110	.98223896	129	.97923485
111	.98208039	130	.97907725
112	.98192188	131	.97891970
113	.98176340	132	.97876221
114	.98160498	133	.97860473
115	.98144662	134	.97844734

Days to come.	*Preſent Worth.*	*Days to come.*	*Preſent Worth.*
135	.97828999	154	.97530996
136	.97813269	155	.97515362
137	.97797545	156	.97499732
138	.97781825	157	.97484108
139	.97766111	158	.97468489
140	.97750401	159	.97452875
141	.97734697	160	.97437266
142	.97718997	161	.97421662
143	.97703304	162	.97406063
144	.97687614	163	.97390470
145	.97671930	164	.97374880
146	.97656256	165	.97359296
147	.97640576	166	.97343717
148	.97624906	167	.97328143
149	.97609242	168	.97312574
150	.97593583	169	.97297009
151	.97577928	170	.97281450
152	.97562279	171	.97265896
153	.97546635	172	.97250246

Days to come.	Present Worth.	Days to come.	Present Worth.
173	.97234803	192	.96940401
174	.97219263	193	.96924959
175	.97203729	194	.96909518
176	.97188199	195	.96894083
177	.97172675	196	.96878652
178	.97157155	197	.96863227
179	.97141640	198	.96847806
180	.97126131	199	.96832387
181	.97110626	200	.96816976
182	.97095127	201	.96801570
183	.97079631	202	.96786169
184	.97064141	203	.96770773
185	.97048656	204	.96755382
186	.97033177	205	.96739995
187	.97017702	206	.96724614
188	.97002232	207	.96709237
189	.96986767	208	.96693865
190	.96971307	209	.96678498
191	.96955852	210	.96663136

Days to come.	*Present Worth.*	*Days to come.*	*Present Worth.*
211	.96647778	230	.96356916
212	.96632426	231	.96341656
213	.96617079	232	.96326401
214	.96601737	233	.96311151
215	.96586399	234	.96295906
216	.96571066	235	.96280665
217	.96555738	236	.96265429
218	.96540415	237	.96250198
219	.96525096	238	.96234972
220	.96509783	239	.96219750
221	.96494475	240	.96204533
222	.96479171	241	.96189322
223	.96463871	242	.96174114
224	.96448578	243	.96158912
225	.96433289	244	.96143715
226	.96418004	245	.96128522
227	.96402725	246	.96113334
228	.96387451	247	.96098151
229	.96372181	248	.96082973

Days to come.	*Present Worth.*	*Days to come.*	*Present Worths.*
249	.96067800	268	.95780414
250	.96052631	269	.95765335
251	.96037467	270	.95750262
252	.96022309	271	.95735194
253	.96007154	272	.95720130
254	.95992004	273	.95705071
255	.95976860	274	.95690016
256	.95961720	275	.95674967
257	.95946585	276	.95659922
258	.95931454	277	.95644882
259	.95916329	278	.95629847
260	.95901208	279	.95614816
261	.95886092	280	.95599790
262	.95870981	281	.95584769
263	.95855875	282	.95569753
264	.95840773	283	.95554742
265	.95825676	284	.95539735
266	.95810584	285	.95524732
267	.95795497	286	.95509735

Days to come.	Preſent Worth.	Days to come.	Preſent Worth.
287	.95494742	306	.95210768
288	.95479753	307	.95195869
289	.95464770	308	.95180974
290	.95449791	309	.95166084
291	.95434817	310	.95151199
292	.95419847	311	.95136318
293	.95404882	312	.95121442
294	.95389922	313	.95106573
295	.95374967	314	.95091706
296	.95360016	315	.95076844
297	.95345070	316	.95061986
298	.95330129	317	.95047134
299	.95315192	318	.95032285
300	.95300261	319	.95017442
301	.95285334	320	.95002603
302	.95270411	321	.94987769
303	.95255493	322	.94972939
304	.95240580	323	.94958114
305	.95225672	324	.94943294

Days to come.	*Present Worth.*	*Days to come.*	*Present Worth.*
325	.94928478	346	.94618418
326	.94913667	347	.94603701
327	.94898861	348	.94588991
328	.94884059	349	.94574286
329	.94869262	350	.94559585
330	.94854470	351	.94544889
331	.94839682	352	.94530198
332	.94824898	353	.94515512
333	.94810120	354	.94500829
334	.94795346	355	.94486151
335	.94780576	356	.94471478
336	.94765811	357	.94456809
337	.94751051	358	.94442145
338	.94736295	359	.94427485
339	.94721544	360	.94412830
340	.94706798	361	.94398179
341	.94692056	362	.94383533
342	.94677319	363	.94368897
343	.94662587	364	.94354254
344	.94647858	365	.94339622
345	.94633135		

TABLE

TABLE XV.

A moſt uſeful TABLE for Reduction of **Pence** and **Farthings** into DECIMAL FRACTIONS, to the Hundredth part of a **Farthing.**

Farthings.	*Decimal Fractions.*
1	.0010416
2	.0020833
3	.0031250

Pence & Farthings.	*Decimal Fractions.*
(1)	.0041666
1	.0052083
2	.0062500
3	.0072916
(2)	.0083333
1	.0093750
2	.0104166
3	.0114583
(3)	.0125000
1	.0135416
2	.0145833
3	.0156250

Pence & Farthings.	Decimal Fractions.	Pence & Farthings.	Decimal Fractions.
(4)	.0166666	(8)	.0333333
1	.0177708	1	.0343750
2	.0187500	2	.0354166
3	.0197916	3	.0364583
(5)	.0208333	(9)	.0375000
1	.0218750	1	.0385416
2	.0229166	2	.0395833
3	.0239583	3	.0406250
(6)	.0250000	(10)	.0416666
1	.0260416	1	.0427082
2	.0270833	2	.0437500
3	.0281250	3	.0447916
(7)	.0291666	(11)	.0458333
1	.0302083	1	.0468750
2	.0312500	2	.0479166
3	.0322916	3	.0489583

DECIMAL FRACTIONS for every Hundredth part of a Farthing.

Hundred Parts.	*Decimal Fractions.*	*Hundred Parts.*	*Decimal Fractions.*
1	.000010416	16	.000166666
2	.000020833	17	.000177083
3	.000031249	18	.000187499
4	.000041666	19	.000197916
5	.000052083	20	.000208333
6	.000062499	21	.000218749
7	.000072916	22	.000229166
8	.000083333	23	.000239583
9	.000093749	24	.000249999
10	.000104166	25	.000260416
11	.000114583	26	.000270833
12	.000124999	27	.000281249
13	.000135416	28	.000291666
14	.000145833	29	.000302083
15	.000156249	30	.000312499

Hundred Parts.	*Decimal Fractions.*	*Hundred Parts.*	*Decimal Fractions.*
31	.000322916	50	.000520833
32	.000333333	51	.000531249
33	.000343749	52	.000541666
34	.000354166	53	.000552083
35	.000364583	54	.000562499
36	.000374999	55	.000572916
37	.000385416	56	.000583333
38	.000395833	57	.000593749
39	.000406249	58	.000604166
40	.000416666	59	.000614583
41	.000427083	60	.000624999
42	.000437499	61	.000635416
43	.000447916	62	.000645833
44	.000458333	63	.000656249
45	.000468749	64	.000666666
46	.000479166	65	.000677083
47	.000489583	66	.000687499
48	.000499999	67	.000697916
49	.000510416	68	.000708333

Hundred Parts.	*Decimal Fractions.*	*Hundred Parts.*	*Decimal Fractions.*
69	.000718749	85	.000885416
70	.000729166	86	.000895833
71	.000739583	87	.000906249
72	.000749999	88	.000916666
73	.000760416	89	.000927083
74	.000770833	90	.000937499
75	.000781249	91	.000947916
76	.000791666	92	.000958333
77	.000802083	93	.000968749
78	.000812499	94	.000979166
79	.000822916	95	.000989583
80	.000833333	96	.000999999
81	.000843749	97	.001010416
82	.000854166	98	.001020833
83	.000864583	99	.001031249
84	.000874999		

The Uſe of the foregoing TABLES.

BEcauſe the uſual Rate of Intereſt is *6 per Cent.* there are Tables calculated for the more ready diſpatch of Queſtions relating either to the *Amount*, or *Preſent Worth* of any Sum; but for any other Rate from (1) to (12) the method will be very plain and practicable. I ſhall begin with ſome Examples at *6 per Cent.*

Example 1.

What is the Amount of 540 l. *in ſeven Years, at* 6 per Cent. *Simple Intereſt?*

Rule.

See for 7 years in the Margin of Table IX. **and againſt it you find** 1.42, **the Amount of** 1 l. **in 7 years; multiply**

540

540 by 1.42, and the Product is the Anſwer.

The given Sum ——	540
The Amount of 1 *l.* in 7 years —	1.42
	1080
	2160
	540
The Amount of 540 *l.* (or the given Sum) in ſeven years —	766.80

Example 2.

What is the Amount of 540 l. *in fifteen Months, at* 6 per Cent. *Simple Intereſt?*

Rule.

Find 15 Months in the Margin of Table X. and againſt it is 1.0755 by that multiply 540, and the Product is the Anſwer.

The

The Amount of 1 *l.* in 15 Months	1.075
The given Sum ———	540
	43 000
	5375
The Amount of 540 *l.* (or the given Sum) in 15 Months —	580.500

Example 3.

What is the Amount of 540 l. *in* 279 *Days, at* 6 per Cent. *Simple Intereſt?*

Rule.

Find 279 Days in the Margin of Table XI. and againſt it is 1.0458, (you may take more or leſs of the Fraction, according as you deſire to be more or leſs exact;) then multiply 1.0458 by 540, and the Product is the Anſwer.

The

The Amount of 1 *l.* in 279 Days	1.04586
The given Sum	540
	4183440
	522930
The Amount of 540 *l.* (or the given Sum) in 279 Days	564.76440

Example 4.

What is the Present Worth of 766.8 l. *at the end of* 7 *Years, at* 6 per Cent. *Simple Interest?*

Rule.

Find 7 Years in Table XII. and against it is .704225; then multiply that by the given Number 766.8, and the Product is the Answer.

The preſent Worth of 1 *l.* after 7 years	.704225
The given Number	766.8
	5633800
	4225350
	4225350
	4929575
The preſent Worth of 766.8 *l.* after 7 years	539.9997300

Which is within 26 Hundred Parts of a Farthing of the truth, and is a ſufficient Proof of the firſt Example.

Example 5.

What is the preſent Worth of 580.5 *l. due after* 15 *Months, at* 6 per Cent. *Simple Intereſt?*

Rule

Rule.

Find 15 Months in Table XIII. **and againſt it is** .93023, &c. **this being multiplied by** 580.5, **is an Anſwer.**

For,

The preſent Worth of 1 *l.* after 15 Months, is	.93023
The given Sum	580.5
	465115
	744184
	465115
The Product is the preſent Worth of 580.5 *l.* after 15 Months	539.998515

Which is within one Farthing of the truth, and may be made within one Hundredth part of a Farthing of the truth, and is a clear Proof of the ſecond Example.

And

And after this manner may any Queſtion of this kind be eaſily and exactly reſolved, and where the Sums are very great, the Operation will not be ſo tedious as that of working by Mr. *Clavel*'s Tables. For a Proof of which, I ſhall here inſert two Examples, one of the Amount, and the other of the preſent Worth of a conſiderable Sum.

Example 6.

Suppoſe the King borrows of ſome Bankers 259879 *l.* 17 *s.* 9 *d.* 3 *q. for a Year and* 349 *Days; what will be the Amount of Principal and Intereſt at the expiration of a Year and* 349 *Days, allowing them* 6 per Cent?

The Operation by Mr. Clavel's *Tables.*

In Mr. *Clavel*'s Tables I can find no more of this Sum at one time than 10000 *l.* therefore I ſeek the Intereſt of that, and find the Intereſt of 10000 *l.*

For

	l.	*s.*	*d.*	*q.*	
For a Year—	600	00	00	0	
For 349 Days	573	13	11	3	very near.
	1173	13	11	3	

The odd Money I reduce into Decimal Parts of a Pound, by the Decimal Table in Mr. *Ruſſel*'s Appendix to Mr. *Clavel*, thus,

s.	*d.*	*q.*	
13	00	0—	.65
	11	3—	.0489583
			.6989583

Then becauſe 200000 is twenty times 10000, I muſt multiply this Fraction and whole Number by 20, to find the Intereſt of 200000 *l.* for a Year, and 349 Days: and alſo multiply the ſaid whole Number and Fraction by 5, for the Intereſt of 50000, (there being five times 10000 contained in it) for the like time.

Example.

Example.

1173.6989583	1173.6989583
20	5
23473.9791660	5868.4947915

The Intereſt of the remaining part of the aforeſaid Sum, *viz.* 9879 *l.* 17 *s.* (omitting the 9 *d.* 3 *q.*) is to be found in this manner:

	l.	*s.*			*l.*	*s.*	*d.*
Intereſt of	9000	00	for a year		540	0	0.00
	800	00			48	0	0.00
	70	00			4	4	0.00
	9	00			0	10	9.60
		10			0	0	7.20
		7			0	0	5.04
					592	15	9.84

Inte-

	l.	*s.*			*l.*	*s.*	*d.*
Intereſt of	9000	00	for 349 days		516	6	6.904
	800	00			45	17	11.013
	70	00			4	0	3.815
	9	00			0	10	3.919
		10			0	0	6.885
		7			0	0	4.820
Intereſt of 9879 *l.* 17 *s.* for 349 Days ——					566	16	1.356
Intereſt of 9879 *l.* 17 *s.* for a Year —— ——					592	15	9.840
Intereſt of 9879 *l.* 17 *s.* for a Year, and 349 Days —					1159	11	11.196

Reduce the Decimal Fractions of the Intereſt of 200000, and 50000, into Shillings and Pence, and then is the

Inte-

	l.	*s.*	*l.*	*s.*	*d.*
Interest of	200000	00	23473	19	6.999
	50000	00	5868	9	10.749
	9879	17	1159	11	11.196
			30502	1	4.944
To which adding the Principal			259879	17	9.750
			290381	19	2.694

The Answer (without considering the Interest of 9 *d.* 3 *q.* which is not to be found by Mr. *Clavel*'s Tables) is 290381 *l.* 19 *s.* 2 *d.* 3 *q.* very near.

The Operation according to the Rules of this little Book is performed by Simple Addition, thus;

The given Sum reduced by *Table I.* is	259879.890625	
The Amount of 1 *l.* for 365 and 349 Days, *viz.* 714 Days, is		1.1173698

Tariffa

Tariffa for the Multiplicand.	
1	259879890625
2	519759781250
3	779639671875
4	1039519562500
5	1299399453125
6	1559279343750
7	1819159234375
8	2079039125000
9	2338919015625

The Multiplication contracted, as is directed in the Introduction to this little Book.

259879.890625
1.1173698

20790	.....
233891	.....
1559279	.....
7796396	.....
181915923	....
259879890	...
2598798906	..
25987989062	.
Product —— 290381.94139	

This Product, *viz.* 290381 *l.* 18 *s.* 9 *d.* 3 *q.* more by $\frac{84}{100}$ of a Farthing, is the Anſwer.

Example 7.

Suppoſe there will be due after 349 *Days, upon the ſeveral Branches of the King's Revenue, the Sum of* 290381.94139 *l.* (*or* 18 s. 9 d. 3 q. *more by* $\frac{84}{100}$ *of a Farthing*;) *and His Majeſty have occaſion to convert this into ready Money, allowing the Advancers* 6 per Cent. *what is the preſent Worth of that Sum? or what muſt thoſe perſons advance in ready Money for the Premiſes?*

Though it be the trueſt, and moſt exact way of all other, to Calculate either the Amount or preſent Worth of Money by Days, yet there is no help at all by Mr. *Clavel*'s Tables to anſwer this Queſtion.

But

But by this little Book,

The Rule is,

l.

Multiply the given sum 290381.94139 by the Present Worth of 1 l. due at the end of 349 Days (which you will find in Table XIV.) .94574, and the Product is an Answer to the Question.

Tariff a for the Multiplicand.	
1	290381941 39
2	580763882 78
3	871145824 17
4	1161527765 56
5	1451909706 95
6	1742291648 34
7	2032673589 73
8	2323055531 12
9	2613437472 51

The Multiplication contracted, as in the Introduction is directed.

	290381.94139
	.94574
1161527	.....
20326735	....
145190970	...
1161527765	..
26134374725	.
Product —— 274625.81723	

After the ſame manner are reſolved any Queſtions, concerning either the *Amount*, or *preſent Worth* of any Sum, either for Years, Months, or Days. The next thing I ſhall Treat of is *Annuities at Simple Intereſt*, which ſhall be the Subject of the following Chapter.

CHAP.

CHAP. II.

Of Annuities at Simple Intereſt.

THe increaſe of *Annuities* is by Multiplication of the reſpective Rates of Intereſt, according to a *Trigonal Progreſſion*, which may be better ſeen by comparing the *Golden Table* of *Trigonal Progreſſion* in *Chap.* 1. with the following Table of *Trigonal Increaſe*, or *Addition* of (6) the Rate of Intereſt *per Cent.* and after it ſhort Rules, which will hold for finding the *Amount*, or *Preſent Worth* of any *Annuity*, for any number of years, at any Rate of *Simple Intereſt* whatſoever.

TABLE.

The Multiplication of any Rates of Intereſt whatſoever belonging to each **Year**, for a Forborn Annuity to 100 **Years.**

This Table is Compoſed from the Golden Trigonal Table.

Years.	*A Trigonal Increaſe, or Addition of Rates of Intereſt.*	*Years.*	*A Trigonal Increaſe, or Addition of Rates of Intereſt.*
1	0	9	36
2	1	10	45
3	3	11	55
4	6	12	66
5	10	13	78
6	15	14	91
7	21	15	105
8	28	16	120

Years.

Years.	*A Trigonal Increaſe, or Addition of Rates of Intereſt.*	*Years.*	*A Trigonal Increaſe, or Addition of Rates of Intereſt.*
17	136	34	561
18	153	35	595
19	171	36	630
20	190	37	666
21	210	38	703
22	231	39	741
23	253	40	780
24	276	41	820
25	300	42	861
26	325	43	903
27	351	44	946
28	378	45	990
29	406	46	1035
30	435	47	1081
31	465	48	1128
32	496	49	1176
33	528	50	1225

Years.	A Trigonal Increaſe, or Addition of Rates of Intereſt.	Years.	A Trigonal Increaſe, or Addition of Rates of Intereſt.
51	1275	68	2278
52.	1326	69	2346
53	1378	70	2415
54	1431	71	2485
55	1485	72	2556
56	1540	73	2628
57	1596	74	2701
58	1653	75	2775
59	1711	76	2850
60	1770	77	2926
61	1830	78	3003
62	1891	79	3081
63	1953	80	3160
64	2016	81	3240
65	2080	82	3321
66	2145	83	3403
67	2211	84	3486

Years.	*A Trigonal Increase, or Addition of Rates of Interest.*	*Years.*	*A Trigonal Increase, or Addition of Rates of Interest.*
85	3570	93	4278
86	3655	94	4371
87	3741	95	4465
88	3828	96	4560
89	3916	97	4656
90	4005	98	4753
91	4095	99	4851
92	4186	100	4950

PROP. I.

To find the Amount of any Annuity, for any given time, and at any Rate of Simple Interest.

General Rule.

TO the Sum of the Annual, Half-Yearly, Quarterly, or Monthly Payments, add the Product of the Annual, Half-Yearly, Quarterly, or Monthly Rate, multiplied by the Number in the foregoing Table, answering to the Number of Years, Half-Years, Quarters, or Months, in the Margin, that the Annuity is to continue; and the Total Sum is the true Amount of that Annuity.

Example 1.

What is the true Amount of an Annuity of 100 l. *in five Years?*

The

The Number in the foregoing Table anſwering to 5 in the Margin, is--	10
	6
That multiplied by 6 (the Annual Intereſt of 100 *l.*) makes ——	60
To which add the five Annual Payments, *viz.* ——	500
The whole Amount is ——	560

Example 2.

What is the Amount of an Annuity of 62 l. *in four Years?*

The Number in the foregoing Table anſwering to 4 in the Margin, is ——	6
That multiplied by 3.72 (the Annual Intereſt of 62 *l.* makes-	22.32
To which adding the 4 Annual Payments, *viz.* 4 times 62 *l.*--	248 00
The whole Amount is —	270.32

Prop.

PROP. II.

To know the Preſent Worth of any Annuity for any given Time, at any Rate, accompting Simple Intereſt.

FOr as much as the *Preſent Worth* of an *Annuity* is in effect, and muſt be imagined, a *Principal*, and the whole *Amount* of the *Annuity* as the *Amount* of the ſaid *Principal* or *Preſent Worth*, in ſo long a time as the *Annuity* is continued,

The Proportion is,

As the Amount of 1 l. *for any time*,
Is to 1 l.
So is the Amount of an Annuity,
To the Preſent Worth.

Therefore the Rule is,

Divide the Amount of the Annuity by the Amount of 1 l. in the given Time, and the Quotient is an Anſwer.

Example

Example 1.

What is the Preſent Worth of an Annuity of 62 l. *for four Years?*

The Amount of 62 *l. per Annum* for four years by the foregoing Rules is found to be 270.32, and the Amount of 1 *l.* forborn four years, by *Table IX.* is found to be 1.24; wherefore I divide 270.32 by 1.24, thus:

1.24) 270.32 (218
248
223
124
992
992
0

The Quotient 218 *l.* is the Anſwer.

Example 2.

What is the Preſent Worth of an Annuity of 100 l. *to continue* 100 *Years?*

The

The Amount of 100 *l.* Annuity for 100 years is 39700 *l.* the Amount of 1 *l.* put out to Intereſt for 100 years is 7 *l.* wherefore divide 39700 by 7, and the Quotient is the Anſwer.

```
7) 39700 (5671.4
   35
   ---
    47
    42
    --
     50
     49
     --
      10
       7
       --
       30
       28
       --
        2
```

For Proof of this, let 5671.4 be put out to Intereſt for 100 years, at *6 per Cent.*

Principal ———	5671.4
Intereſt of 1 *l.* for a year ——	.06
Annual Int. of the Principal—	340.284

Number

	340.284
Number of Years ——	100
Int. of 5671.4*l.* for 100 years	34028.400
To which add the Principal—	5671.4
And the Remainder of the foregoing Diviſion ——	.2
The Sum is the Amount of 100*l.* Annuity for 100 years	39700.0

Wherefore the Operation is exact and juſt, though at the ſame time it is a certain Argument, that the ſaid Annuity to continue 100 years at *Simple Intereſt*, would be valued at above 56 years Purchaſe; for dividing 5671 by 100 (that is to ſay, cutting off the two laſt Figures) the remaining Figures ſhew it to be 56 years Purchaſe, over and above the Fraction of .71.

After the ſame Method,

The Amount of 100 *l.* Annuity in 50 years is 12350 *l.* the Amount of 1 *l.* put out to Intereſt at *6 per Cent.* for 50 years is 4 *l.* wherefore dividing the ſaid Amount by (4),

4) 12350 (3087.5

The

The Quotient, or *Preſent Worth* is 3087.5, which is above 30 years Purchaſe. From whence it is clear and manifeſt, that all Calculations of *Annuities* at *Simple Intereſt* are abſolutely uſeleſs and ridiculous: For the truth is, all *Preſent Worths* or *Purchaſes*, either of *Annuities*, or *Principal* Sums, due at any time hereafter, ought to be conſidered in a *Geometrical* Proportion, from a *Purchaſe for ever*, (or *to the end of the World*) according to the ſeveral and reſpective Rates of *Compound Intereſt*. And if this be a truth as to *Preſent Worths*, it will be alſo a truth as to the *Amounts*, (as has been ſufficiently explained in the Introduction to this Book.) And conſequently, all Calculations, according to *Simple Intereſt*, ought wholly to be laid aſide as erroneous and uſeleſs.

CHAP.

CHAP. III.

The ERRORS *of the ordinary* Rules *and* Tables *of* Rebate, *relating to* Annuities, *according to the Rate of* Simple Intereſt, *diſcovered and rectified.*

ALthough all Tables of Rebate for *Annuities* at *Simple Intereſt*, ought to be wholly rejected as moſt ridiculous and uſeleſs, for the Reaſons laid down in the foregoing Chapter, yet I do think it here ſeaſonable, and indeed neceſſary, to animadvert upon the ordinary Rules relating to the preſent worth of ſuch *Annuities*, which have been Compoſed by the reſpective Authors upon great miſtakes, and for want of due reflection upon *Arithmetical* and *Geometrical* Progreſſions.

I ſhall mention only two Examples.

The firſt is a Rule laid down by Mr. *John Kerſey*, in his Appendix, bound

up with Mr. *Wingate*'s Arithmetick, *Chap.* 5. *pag.* 378. Printed 1678. which is the very same with that made use of by Dr. *Newton*, in his *Scale of Interest*, pag. 20.

" *When it is required to find the present* " *worth of an Annuity, by Rebating or* " *Discompting at a given Rate of Simple* " *Interest, the Operation will be as in the* " *following Example*, viz.

" *How much present Money is equivalent* " *to an Annuity of* 100 l. per Annum, " *to continue* 5 *Years, Rebate being* " *made at the rate of* 6 per Cent?

" *Answer* 425 l. 18 s. 9 d. 2 q. *very* " *near: Thus*,

Year.		*Present worths.*
1	*As* 106 *to* 100 :: *So* 100 *to*	94.33962
2	*As* 112 *to* 100 :: *So* 100 *to*	89.28571
3	*As* 118 *to* 100 :: *So* 100 *to*	84.74576
4	*As* 124 *to* 100 :: *So* 100 *to*	80.64516
5	*As* 130 *to* 100 :: *So* 100 *to*	76.92307
	Answer	425.93933

" *For*,

" *For*, ſaith he, *it is manifeſt that* " *there muſt be computed the preſent worth* " *of* 100 l. *due at the firſt Years end. Alſo* " *the preſent worth of* 100 l. *due at the* " *ſecond Years end, and in like manner for* " *the third, fourth, and fifth Years. All which* " *preſent Worths being added together, the* " *Aggregate or Sum will be the total preſent* " *worth of the Annuity, that is,* 425 l. " 18 s. 9 d. 2 q. *very near.*

I muſt confeſs I cannot but wonder how ſuch groſs miſtakes ſhould paſs through the hands of ſo many Learned and Ingenious Artiſts. For this very Example I find Publiſhed by the ſame Mr. *Kerſey*, in the year 1650. and ſince that time, owned and made uſe of by ſeveral others.

But for the right underſtanding of the truth of this, and all other Queſtions of this kind. It is neceſſary to requeſt the Reader to contemplate with me a few things.

1. What

1. What is due of an Annuity that is not paid, at the end of the first, second, third, fourth, and fifth years, at Simple Interest.

I. At the first years end.

	l.
At the first years end there is due the just sum of ———	100

II. At the second years end.

At the second years end, there is due,

	l.
1. For the first year ———	100
2. For the second year ———	100
Sum ———	200

And besides this,

	l.
For the Interest of the 100 *l.* due at the first years end, and detained during the whole second year ——	6

III. At

III. At the third years end.

At the third years end, there is due,

	l.
1. For the first year	100
2. For the second year	100
3. For the third year	100
Sum	300

Beſides this, there is due,

	l.
1. For the Intereſt of the first 100 *l.* for the ſecond year	6
2. For the Intereſt of the first 100 *l.* for the third year	6
3. For the Intereſt of the ſecond 100 *l.* for the third year	6
Sum	18

IV. At

IV. At the fourth years end.

	l.
1. For the first year	100
2. For the second year	100
3. For the third year	100
4. For the fourth year	100
Sum	400

Besides this,

	l.
1. For the Interest of the first 100 *l.* for the second year	6
2. The Interest of the first 100 *l.* for the third year	6
3. The Interest of the first 100 *l.* for the fourth year	6
4. The Interest of the second 100 *l.* for the third year	6
5. The Interest of the second 100 *l.* for the fourth year	6
6. The Interest of the third 100 *l.* for the fourth year	6
Sum	36

V. At

V. At the fifth years end.

	l.
1. For the first year	100
2. For the second year	100
3. For the third year	100
4. For the fourth year	100
5. For the fifth year	100
Sum	500

Besides this,

	l.
1. For the Interest of the first 100 *l.* for the second year	6
2. For the Interest of the first 100 *l.* for the third year	6
3. For the Interest of the first 100 *l.* for the fourth year	6
4. For the Interest of the first 100 *l.* for the fifth year	6
	24

5. For

	l.
5. For the Interest of the second 100 *l.* for the third year	6
6. For the Interest of the second 100 *l.* for the fourth year	6
7. For the Interest of the second 100 *l.* for the fifth year	6
8. For the Interest of the third 100 *l.* for the fourth year	6
9. For the Interest of the third 100 *l.* for the fifth year	6
10. For the Interest of the fourth 100 *l.* for the fifth year	6
	36
	24
Sum Total of the Interest for the five years	60
To which adding the five Annual payments, *viz.*	500
The whole Amount of the Annuity of 100 *l.* forborn five years, is	560

In the next place, I desire the Ingenious Reader to consider well the third Prop. of *Diophantus Alexandrinus*, concerning *Poligonal* Numbers.

PROP. III.

ΕΑ'ν ὧσιν ἀριθμοὶ, &c. If Numbers (how many ſoever they be) exceed one another by an equal Interval, then the Interval between the greateſt and the leaſt, is Multiplex of that equal Interval, according to the multitude of Numbers propounded, leſs by one.

1

For Example.

Let there be five given Terms, *A*, *B*, *C*, *D*, *E*, and let *G* be the
2 common Interval or Difference.

To apply which, let $\begin{cases} A = 100 \\ G = 6 \end{cases}$

Number of Terms.	Then is,		
1	A = A	1	A = 100
2	B = A + G	2	B = 100 + 6
3	C = A + G + G	3	C = 100 + 6 + 6
4	D = A + G + G + G	4	D = 100 + 6 + 6 + 6
5	E = A + G + G + G + G	5	E = 100 + 6 + 6 + 6 + 6

That is to ſay, the greateſt Term is equal to the leaſt, and as many Differences as there are more Terms beſides the leaſt. So here *E* is equal to 100, and 4 Differences, or 4 times 6. And the Sums of thoſe Numbers are the true Amount of an Annuity at Simple Intereſt; thus,

	The Annual Rents, together with the Annual Interests.	The Sums of Annual Rents, & Annual Interests, for the respective Years.	The Number of Annual Interests, or Differences, that are contained in every respective Sum, besides the Annual Rents.
1	100	100	
2	100 + 6	206 =	1
3	100 + 6 + 6	318 =	3
4	100 + 6 + 6 + 6	436 =	6
5	100 + 6 + 6 + 6 + 6	560 =	10

Therefore the true Amount of an Annuity of 100 *l.* is as follows.

Year.		Amounts.
1	100	100
2	100 + 100 + 6	206
3	100 + 100 + 100 + 6 + 6 + 6	318
4	100 + 100 + 100 + 100 + 6 + 6 + 6 + 6 + 6 + 6	436
5	100 + 100 + 100 + 100 + 100 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6	560

Con-

Conſequently the Proportion is not as Mr. *Kerſey* makes it, ſave only for the firſt year.

But the true proportion holds thus, viz.

		Amounts.	Preſent worths.
At the 1 year end	As 106 to 100 :: So 100 to		94.33962
At the 2 years end	As 112 to 100 :: So 206 to		183.92856
At the 3 years end	As 118 to 100 :: So 318 to		269.49152
At the 4 years end	As 124 to 100 :: So 436 to		351.61290
At the 5 years end	As 130 to 100 :: So 560 to		430.76923

Now therefore to perfect the Demonſtration,

1. The preſent worth of the firſt year is —— —— 94.33962

2. Becauſe 183.92856 is the preſent worth of the two firſt years, therefore if the preſent worth of the firſt year (*viz.* 94.33962) be deducted out of it, it muſt needs leave the preſent worth of the ſecond year, *viz.* ——	89.58894
3. Becauſe 269.49152 is the preſent worth of the three firſt years, therefore deducting out of it 183.92856, (*viz.* the preſent worth of the two firſt years) it leaves the preſent worth of the third year, *viz.* —	85.56296
4. So deducting 269.49152 out of 351.61290, there remains the preſent worth of the fourth year —	82.12138
5. And 430.76923 leſs by 351.61290, is the preſent worth of the laſt year, *viz.* ——	79.15633
Total Sum of all the preſent worths —	430.76923

To

To conclude, it is evident from the two last Calculations, and that by clear Demonstration,

That,

	l.
1. The Amount of the first year is	100
2. The Amount of the two first years is	206
3. The Amount of the three first years is	318
4. The Amount of the four first years is	436
5. The Amount of all five years is	560

As likewise,

That the present worth,

1. Of the first year is	94.33962
2. Of the two first years is	183.92856
3. Of the three first years is	269.49152
4. Of the four first years is	351.61290
5. Of all five years is	430.76923

And

And laſtly, it is evident and plain,

That the preſent Worth,

1.	Of the firſt year is ——	94.33962
2.	Of the ſecond year is ——	89.58894
3.	Of the third year is ——	85.56296
4.	Of the fourth year is ——	82.12138
5.	Of the fifth year is ——	79.15633
	Total Sum of the preſent worths ——	430.76923

Whereas Mr. *Kerſey* makes the Total of the preſent worths but 425.93933, which is a very great miſtake; as are all his particular preſent worths, (the firſt only excepted) which he could not well Calculate amiſs.

Beſides, if 425.93933 be put out for five years, it will amount to no more than 553.714109. Whereas 430.76923 in five years, at *6 per Cent.* amounts to 560 *l.* which is the true Amount of 100 *l. per Annum* for five years, as has been ſufficiently Demonſtrated, and agrees exactly

exactly with the foregoing Rule: So that Mr. *Kersey* in this Example falls short of the truth, as to the present worth, no less than 4.8353, that is, 4 *l.* 16 *s.* 8 *d.* 1 *q.* more by $\frac{28}{100}$ of a Farthing. Which Error, if it be so considerable in an Annuity of 100 *l. per Annum*, what would it be in an Annuity of 100000 paid *per Annum?* No less than 4835 *l.* 6 *s.*

2 *Example.*

A second Example I have borrowed from Mr. *Dary*, who has truly detected the Error of it, although he has not sufficiently explained the Reason of the Error; and therefore the Reader will find it here more strictly examined and refuted by a plain Demonstration obvious to the meanest capacity.

The Example is this:

What is the present worth of an Annual Rent of 62 l. *to be enjoyed four Years to come, allowing the Purchaser* 6 per Cent. *Simple Interest?*

The

The uſual Method, ſays Mr. *Dary*, is thus:

				l.
For the	first	year	*As* 106 *to* 100 :: *So* 62 *to*	58.490
	ſecond		*As* 112 *to* 100 :: *So* 62 *to*	55.357
	third		*As* 118 *to* 100 :: *So* 62 *to*	52.543
	fourth		*As* 124 *to* 100 :: *So* 62 *to*	50.000
Sum of all the preſent worths ——				216.390

M

Now let the Error of this Operation be traced from the beginning.

The 1. The Annual Intereſt of 62 *l. per Annum*, is 3.72; wherefore by the foregoing Prop. of *Diophantus Alexandrinus*, pag. 73.

The Amount of

The first year	is	62	62.00
The second year	is	62 + 3.72	65.72
The third year	is	62 + 3.72 + 3.72	69.44
The fourth year	is	62 + 3.72 + 3.72 + 3.72	73.16
		The whole Amount	270.32

Therefore the true Amount of an Annuity of *62 l.* at each years end, is as follows.

At the end of the

First year		62	62.00
Second year		62 + 62 + 3.72	127.72
Third year		62 + 62 + 62 + 3.72 + 3.72 + 3.72	197.16
Fourth year		62 + 62 + 62 + 62 + 3.72 + 3.72 + 3.72 + 3.72 + 3.72 + 3.72	270.32

Wherefore the true Calculation of the preſent Worths is as follows, *viz.*

At the end of the

			Amounts.	*Preſent worths.*
Firſt	year	*As* 106 *to* 100 ::	*So* 62	*to* 58.490
Second	year	*As* 112 *to* 100 ::	*So* 127.72	*to* 114.035
Third	year	*As* 118 *to* 100 ::	*So* 197.16	*to* 167.084
Fourth	year	*As* 124 *to* 100 ::	*So* 270.32	*to* 218.000

Now

Now therefore,

1. The preſent worth of the firſt year is	58.490
2. The preſent worth of the two firſt years leſs by the preſent worth of the firſt, that is, from 114.035 deducting 58.490, the preſent worth of the ſecond year is	55.545
3. The preſent worth of the three firſt years (the preſent worth of the two firſt being deducted) that is, from 167.084 deducting 114.035, the remainder of the preſent worth of the third year is	53.049
4. Deducting from 218 the preſent worth of all four years, 167.084 the preſent worth of the firſt three years, the remainder (*viz.* 50.916) is the preſent worth of the fourth year	50.916

So then,

The preſent worth,

1. Of the firſt year is	58.490
2. Of the ſecond year is	55.545
3. Of the third year is	53.049
4. Of the fourth year is	50.916
Total of the preſent worths	218.000

Whereas the uſual way of *Rebate* makes it not above 216.390, which is leſs than the truth by 1.610, which is 1 *l.* 12 *s.* 2 *d.* 2 *q. ferè.*

And

And if 216.390 be put out at Intereſt at 6 *per Cent.* for four years, it will amount to no more than 268.3236, which is leſs than the true Amount of 218 *l. viz.* 270.32 by 1.9564, which being reduced, is 1 *l.* 19 *s.* 11 *d.* more by $\frac{11}{100}$ parts of a Farthing.

All which may ſerve as a ſufficient caution againſt ſuch erroneous Tables and Calculations.

A

A ſecond Reflection upon that Example of Mr. John Kerſey.

I Muſt confeſs that the preſent Worth of 100 *l.* payable a year hence is 94.33962; and that the preſent worth of a ſingle 100 *l.* payable two years hence, is as he has put it 89.28571; and the preſent worth of another bare 100 *l.* payable three years hence is 84.74576; and ſo to the end. And the Total of thoſe preſent worths is as he has put it, *viz.*

1	*As* 106 *to* 100 :: *So* 100 *to*	94.33962
2	*As* 112 *to* 100 :: *So* 100 *to*	89.28571
3	*As* 118 *to* 100 :: *So* 100 *to*	84.74576
4	*As* 124 *to* 100 :: *So* 100 *to*	80.64516
5	*As* 130 *to* 100 :: *So* 100 *to*	76.92307
Total Sum of the preſent worths		425.93933

And

And this is part of that very Table which I have calculated (being the twelfth Table of the first Chapter of this first Book) for *The present worth of One Pound after any Number of Years under* 32.

But reason tells me, that in this Calculation there is no consideration had of the Forbearance of *Interest*; for certain it is, if the first 100 *l.* had been paid at the first years end, it might have been put out to Interest, and at the five years end would have given an increase of four times 6 *l.* or 24 *l.* at Simple Interest; and so the second 100 *l.* would have increased in the three last years three times 6 *l.* or 18 *l.*

That is to say,

	l.
The first 100 *l.* would increase in the four last years	24
The second 100 *l.* would increase in the three last years	18
The third 100 *l.* would increase in the two last years	12
The fourth 100 *l.* would increase in the last year	6
The whole increase	60

There-

Therefore there would be due, if all were forborn,

		l.
1.	At the first years end	100
2.	At the second years end	100+06
3.	At the third years end	100+12
4.	At the fourth years end	100+18
5.	At the fifth years end	100+24
		500+60

Now to Calculate the present worth of any, or all of these Sums, let it be considered by what proportion the Calculation ought to be made.

For Example.

Suppose the *Annuity* to be forborn only two years, and it be required to give the present worth of the two first years.

Whatsoever the Answer is, all will agree, that the Sum which is given in to be the present worth of those two years, being put out to Interest, must amount to 206 at the end of two years.

Therefore I ſay,

As 112 *to* 100 :: *So* 206 *to* 183.92856.

If this be a true Anſwer, then that Sum, *viz.* 183.92856, being put out to Intereſt at *6 per Cent.* for two years, muſt amount to 206.

By the former Rules.

I Multiply the Sum ——	183.92856
By the Intereſt of 1 *l. per Annum, viz.* ——	.06
The Sum of one years Intereſt ——	11.0357136
	2
This multiplied by 2, for two years Intereſt, gives	22.0714272
To this add the Principal	183.92856
The Total Sum ——	205.99998

Now this Total Sum wants but $\frac{2}{100000}$ of 206.

For

For,

From	206.00000
Deduct	205.99998
The Remainder is	000.00002

But now take the Sum of Mr. *Kerſey*'s two years preſent Worths, *viz.*

For the firſt year	94.33962
For the ſecond year	89.28571
Total Sum	183.62533

Let therefore this Sum be put out to Intereſt for two years.

Wherefore as before,

I Multiply	183.62533
By the Intereſt of 1 *l. per Annum*	.06
The Product is one years Intereſt	11.0175198

And

	11.0175198
	2
And the Sum of the two years Interest is	22.0350396
The Principal	183.62533
The whole Amount of 183.62533 in two years is	205.6603696

Which is less than 206 (the true Amount of an Annuity of 100 *l.* for two years) by .3396304; which though it be but 6 *s.* 8 *d.* and somewhat more in two years time, yet were the Sum greater, or the time longer, it would prove a very considerable Error.

Wherefore I conclude, that Mr. *Kersey's* Calculations are erroneous as to Annuities, and mine exact: And there needs no further Illustrations or Demonstrations about it.

The next thing to be Treated of in course, is touching the Equation of several Payments, and reducing them into one entire Payment at a certain time, so as there may be no loss either to Creditor or Debtor. *CHAP.*

CHAP. IV.

Equation of Payments Rectified, and made Practicable for all Merchants, and others.

Equation of Payments is by all agreed to be the reducing of ſeveral Payments into one entire Payment, at ſuch a time, as neither Creditor or Debtor may be a loſer by it, they being both agreed, the one to pay, and the other to receive, the ſaid entire Payment at the appointed time.

Now of the Books that I have met with, and the Men I have diſcourſed with, about *Equation of Payments* at *Simple Intereſt*, ſome have adventured to give Rules for it, others have endeavoured to ſhew that ſuch Rules are erroneous, and ſome of the moſt Learned of them have concluded the thing to be abſolutely impracticable and impoſſible; and ſo left

left the poor Merchants to agree as they pleaſe about it.

The truth is, they have been, and are all of them, miſtaken about the preſent Worths of *Annuities* at *Simple Intereſt*, and that miſtake has begot many others.

The method that I ſhall therefore take, ſhall be, Firſt, to expoſe to the Readers view both the true Amount and preſent Worth of an *Annuity* of 100 *l.* for five years, at ſeveral Rates of Intereſt. And from thence frame, and give a general Rule for the reducing of ſeveral equal Payments due at equi-diſtant times, to one entire Payment. And after that, another Rule for reducing of unequal Payments at ſeveral times not equi-diſtant, to one entire Payment at a certain time, ſo as neither he who pays, nor he who receives it, ſhall be any loſer by it.

The Tables of the Amounts and preſent Worths of an *Annuity* of 100 *l.* for five years (at different Rates of Intereſt) do here follow in their order.

TABLE

TABLE I.

At (1) per Cent. Simple Intereſt.

Years.	The Amount of 100 l. in 1, 2, 3, 4, or 5 Years.	Amount of Annual Payments, at the end of 1,2,3,4 or 5 Years.	The preſent Worth of the firſt year, the firſt two years, the firſt three years, the firſt four years, or all the five years.	The particular preſent Worths of the firſt, ſecond, third, fourth, or fifth year	The Amount of the Total preſent Worth of all the five Payments, at the end of the firſt, ſecond, third, fourth, or fifth Year.
1	101	100	99.00990	99.00990	490.57142
2	102	201	197.05882	98.04892	495.42856
3	103	303	294.17475	97.11593	500.28570
4	104	406	390.38461	96.20986	505.14285
5	105	510	485.71428	95.32967	509.99999
				485.71428	

TABLE II.

At (2) per Cent. *Simple Intereſt.*

Years.	*The Amount of* 100 l. *in* 1, 2, 3, 4, *or* 5 *Years.*	*Amount of Annual Payments, at the end of* 1,2,3,4 *or* 5 *Years.*	*The preſent Worth of the firſt year, the firſt two years, the firſt three years, the firſt four years, or all the five years.*	*The particular preſent Worths of the firſt, ſecond, third, fourth, or fifth year.*	*The Amount of the Total preſent Worth of all the five Payments, at the end of the firſt, ſecond, third, fourth, or fifth year.*
1	102	100	98.03921	98.03921	482.18181
2	104	202	194.23076	96.19155	491.63635
3	106	306	288.67924	94.44848	501.09089
4	108	412	381.48148	92.80224	510.54543
5	110	520	472.72727	91.24579	519.99999
				472.72727	

TABLE III.

At (3) per Cent. Simple Intereſt.

Years.	The Amount of 100 l. in 1, 2, 3, 4, or 5 Years.	Amount of Annual Payments, at the end of 1,2,3,4 or 5 Years.	The preſent Worth of the firſt year, the firſt two years, the firſt three years, the firſt four years, or all the five years.	The particular preſent Worths of the firſt, ſecond, third, fourth, or fifth year.	The Amount of the Total preſent Worth of all the five Payments, at the end of the firſt, ſecond, third, fourth, or fifth Year.
1	103	100	97.08737	97.08737	474.69564
2	106	203	191.50943	94.42206	488.52173
3	109	309	283.48623	91.97680	502.34782
4	112	418	373.21428	89.72805	516.17390
5	115	530	460.86956	87.65528	529.99999
				460.86956	

TABLE IV.

At (4) per Cent. Simple Intereſt.

Years.	The Amount of 100 l. in 1, 2, 3, 4, or 5 Years.	Amount of Annual Payments, at the end of 1,2,3,4 or 5 Years.	The preſent Worth of the firſt year, the firſt two years, the firſt three years, the firſt four years, or all the five years.	The particular preſent Worths of the firſt, ſecond, third, fourth, or fifth year.	The Amount of the Total preſent Worth of all the five Payments, at the end of the firſt, ſecond, third, fourth, or fifth year.
1	104	100	96.15384	96.15384	468.00000
2	108	204	188.88888	92.73504	486.00000
3	112	312	278.57142	89.68254	504.00000
4	116	424	365.51724	86.94582	522.00000
5	120	540	450.00000	84.48276	540.00000
				450.00000	

TABLE V.

At (5) per Cent. Simple Intereſt.

Years.	The Amount of 100 l. in 1, 2, 3, 4, or 5 Years.	Amount of Annual Payments, at the end of 1, 2, 3, 4 or 5 Years.	The preſent Worth of the firſt year, the firſt two years, the firſt three years, the firſt four years, or all the five years.	The particular preſent Worths of the firſt, ſecond, third, fourth, or fifth year.	The Amount of the Total preſent Worth of all the five Payments, at the end of the firſt, ſecond, third, fourth, or fifth year.
1	105	100	95.23809	95.23809	461.99999
2	110	205	186.36363	91.12554	483.99999
3	115	315	273.91304	87.54941	505.99999
4	120	430	358.33333	84.42029	527.99999
5	125	550	439.99999	81.66666	549.99999
				439.99999	

TABLE VI.

At (6) per Cent. Simple Intereſt.

Years.	The Amount of 100 l. in 1, 2, 3, 4, or 5 Years.	Amount of Annual Payments, at the end of 1,2,3,4 or 5 Years.	The preſent Worth of the firſt year, the firſt two years, the firſt three years, the firſt four years, or all the five years.	The particular preſent Worths of the firſt, ſecond, third, fourth, or fifth year.	The Amount of the Total preſent Worth of all the five Payments, at the end of the firſt, ſecond, third, fourth, or fifth year.
1	106	100	94.33962	94.33962	456.61538
2	112	206	183.92856	89.58894	482.46153
3	118	318	269.49152	85.56296	508.30769
4	124	436	351.61290	82.12138	534.15384
5	130	560	430.76923	79.15633	559.99999
				430.76923	

TABLE VII.

At (10) per Cent. Simple Intereſt.

Years.	The Amount of 100 l in 1, 2, 3, 4, or 5 Years.	Amount of Annual Payments, at the end of 1,2,3,4 or 5 Years.	The preſent Worth of the firſt year, the firſt two years, the firſt three years, the firſt four years, or all the five years.	The particular preſent Worths of the firſt, ſecond, third, fourth, or fifth year.	The Amount of the Total preſent Worth of all the five Payments, at the end of the firſt, ſecond, third, fourth, or fifth year.
1	110	100	90.90909	90.90909	440.00000
2	120	210	175.00000	84.09090	480.00000
3	130	330	253.84615	78.84615	520.00000
4	140	460	328.57142	74.72527	560.00000
5	150	600	400.00000	71.42858	600.00000
				399.99999	

Over-

Obſervations upon the foregoing Tables.

1. IT is obſervable, That as the Rate of Intereſt increaſes, the preſent Worth decreaſes; that is to ſay,

For the preſent Worth of an Annuity of 100 l. *for five Years,*

At	1	*per Cent.* is	485.71428	
	2		472.72727	
	3		460.86956	
	4		450.00000	
	5		439.99999	*&c.*
	6		430.76923	
	10		399.99999	*&c.*

2. It is no leſs obſervable, That an Annuity of 100 *l.* increaſes by a *Trigonal Progreſſion* of the reſpective *Rates.* But the *preſent Worth* increaſes by an *Unitarian* Addition of the *Rate* to the *Principal* for each year reſpectively. And theſe two ways are very different the one from

from the other, as may be ſeen by comparing them together, as follows in the Example of an Annuity of 100 *l.* at 6 *per Cent.* Simple Intereſt.

		Amount of the Annuity for each of the five Years.	*Amount of the preſent Worth of the Annuity for each of the five Years.*
At the 1 years end		100	456.61538
At the 2 years end		206	482.46153
At the 3 years end		318	508.30769
At the 4 years end		436	534.15384
At the 5 years end		560	559.99999 &c.

And yet how different ſoever they are at their firſt ſetting out, and by the way, yet the further they go, the nearer they come together, and at laſt agree to an inſenſible difference, and ſuch as may be diminiſhed *in infinitum*, either to the *Hundredth*, or *Thouſandth*, or any leſs part of a *Farthing* whatſoever can be deſired.

3. As a conſequence of the foregoing Obſervation:

If

If *A.* be to pay *B.* 100 *l. per Annum* for five years, and they agree that the 500 *l.* ſhall be paid at one entire Payment, they muſt be ſure to pitch upon ſuch a time, as that the ſaid 500 *l.* being put out to Intereſt from that time to the end of five years, may be equal to the whole Amount of thoſe five Annual Payments.

For Example.

Let the Rate of Intereſt be *6 per Cent. per Annum*, and the Time of paying the ſaid 500 *l.* be at the end of three years, and ſo there are two years to come.

If the ſaid 500 *l.* for two years, at *6 per Cent.* will amount to 560 *l.* (which is the whole Amount of the Annuity at the five years end) the Time is right, if not, it is a falſe Time.

But the Annual Intereſt of 500 *l.* is 30 *l.* therefore in two years it is 60 *l.* and that added to 500, makes 560 *l.* And therefore it was a juſt time to pay the ſaid 500 *l.* at one entire Payment. For ſo *B.* has at the five years end, the whole effect

effect of his Annuity improved to the utmoſt, at *6 per Cent.* Simple Intereſt.

And *B.* having paid nothing before of the Annuity, and being obliged to pay nothing of it afterwards; but having enjoyed it for three years (which is the beſt part of it) already, and being to enjoy it two years more; the 500 *l.* he now pays, is only as a Purchaſe of the Amount of the whole *Annuity*, which will be due at the five years end, *viz.* 560 *l.* and ſo gives the *Preſent Worth* of 560 *l.* from the three years end to the 5 years end; and ſo he pays not a Farthing more than the true worth of it. And for that true worth of it, to the end of the 5 years he has enjoyed, and muſt enjoy the ſaid Annuity it ſelf to the end of the ſaid five years. And ſo neither *A.* nor *B.* have the leaſt wrong or loſs, neither the one by paying, nor the other by receiving, this one entire Payment of 500 *l.* at the three years end; and if either or both ſhould ſell their concerns, it would be the ſame thing.

4. It is obſervable that the *preſent Worth* of the ſaid *Annuity*, at any *Rate* of *Intereſt*, does at the three years end exceed the Aggregate of the ſaid five Sums, (or 500 *l.*)

For Example.

The preſent Worth of an *Annuity* of 100 *l. per Annum* to continue five years, does at the end of three years,

Amount,

At	1	*per Cent.* to	500.28570
	2		501.09089
	3		502.34782
	4		504.00000
	5		505.99999
	6		508.30769
	10		520.00000

5. It being as evident from this laſt Obſervation, That the *preſent Worth* of the whole *Annuity* being put out to Intereſt for three years, will at any *Rate* of Intereſt, exceed the Aggregate of all the

the five Payments, and the greater the Rate of Intereſt is, the greater is that Exceſs.

For Example.

At (1) *per Cent.* the Exceſs is but .28570; at (2) *per Cent.* the Exceſs is ſomewhat more, *viz.* 1.09089; at (3) *per Cent.* it is 2.34782; at (10) *per Cent.* it is 20 *l.* and at (15) *per Cent.* it would be much more.

And it being likewiſe evident by all the foregoing Tables, whatever the Rate of Intereſt be, That 500 *l.* more by the Intereſt of 500 *l.* for two years, is equal to the whole Amount of the Annuity of 500 *l.* for five years. That is to ſay,

The Intereſt of 500 l. *for two years,*

At (1) *per Cent.* is 10 *l.* which added to 500 *l.* makes the Amount	*l.* 510
At (2) *per Cent.* is 20 *l.* which added to 500 *l.* makes the Amount	520

At

At (3) *per Cent.* is 30 *l.* which added to 500 *l.* makes the Amount — — — — — — } *l.* 530

At (4) *per Cent.* is 40 *l.* which added to 500 *l.* makes the Amount — — — — — — } 540

At (5) *per Cent.* is 50 *l.* which added to 500 *l.* makes the Amount — — — — — — } 550

At (6) *per Cent.* is 60 *l.* which added to 500 *l.* makes the Amount — — — — — — } 560

And laſtly, it being ſufficiently evident by the third Obſervation, That if the 500 *l.* be paid at one entire Payment, at the end of three years, or, which is all one, two years before the *Annuity* be at an end; neither Creditor nor Debtor can have the leaſt wrong, or ſuffer the leaſt loſs.

It may therefore be ſafely concluded, That it is practicable and poſſible to give a good and true Rule for *Equation of ſeveral Payments*; and likewiſe, that it is no way neceſſary (as ſome very Learned Artiſts

Artists would needs have perswaded me) to try that Rule by this Mark, *viz. That the present Worth of the said* 500 l. *at the three Years end, must be the present Worth of the whole Amount of the said Annuity.* For by what has been already proved, the present Worth of the whole Annuity at any Rate of Interest, will at the three years end exceed the said 500 *l.*

Now therefore I shall proceed to give two General Rules.

The first, for Equation of several equal Payments at equi-distant times.

The second, for Equation of several unequal Payments at several times not equi-distant.

1. *General Rule.*

For Equation of any given Number of equal Payments due at equi-distant Times.

Rule.

Out of the whole Amount of the Annuity, or Monthly Payment, deduct the

the Aggregate of the ſeveral Payments, and the Remainder, if Annual, multiply by 365; if Monthly, by 30.416; then divide the Product by the Annual, or Monthly Intereſt of the ſaid Aggregate, and the Quotient is the number of Days, before the end or Term of the Annuity, or Monthly Payment, when the ſaid Aggregate may be paid without loſs to either Creditor or Debtor.

1. Example.

Let the Annuity be 100 *l.*
The time it is to continue five years.

	l.
The whole Amount of the Annuity	560
The Aggregate of the ſeveral Payments	500
The Annual Intereſt of the Aggregate (*viz.* 500)	30

Now ſuppoſe *A.* be obliged to pay to *B.* 100 *l. per Annum* for five years, but they both agree that *A.* ſhall pay to *B.* the Aggregate 500 *l.* at one entire Payment.

And

And then the Queſtion is, at what time the ſaid 500*l.* is to be paid?

Therefore as the Rule directs,

Out of the whole Amount ——	560
Deduct the Aggregate ——	500
The Remainder is ——	60
	365
Which Muliplied by 365, is ——	21900

That divided by 30, gives a Quotient, which is the true number of Days before the end of the ſaid Annuity, when the ſaid 500*l.* is to be paid, *viz.* 730

Thoſe 730 Days divided by 365, gives a Quotient of two years.

So then the true time of paying the ſaid Aggregate of ſeveral payments, (*viz.* 500*l.*) is two years before the end of five years; that is at the end of the third year.

2. *Ex-*

2. *Example.*

A. is to pay *B.* 62 *l. per Annum* for four years; but they agree that *A.* ſhall pay the Aggregate of the ſeveral Sums, (*viz.* 248) at one entire Payment.

If the Annual Payment be ——	62.00
The Amount of that in four years, at 6 *per Cent.* will be —	270.32
The Aggregate of the ſeveral Payments, or four times 62, is	248.00
The Annual Intereſt of the ſaid Aggregate ——————	14.88

Wherefore,

Out of the whole Amount —	270.32
Deduct the Aggregate of the ſeveral Payments —— ——	248.00
The Remainder is —— ——	22.32

This 22.32 is firſt to be multiplied by 365, which is 8146.80.

That

That Product 8146.80 being divided by the Annual Intereſt of the Aggregate 248, *viz.* 14.88, gives a Quotient of 547.5 Days.

This Quotient 547 Days and $\frac{5}{10}$, or a half, is a true Anſwer to the Queſtion; that is to ſay, 547 Days and a half, or one Year, and 172 Days and a half, before the end of four years, is the juſt time to pay the ſaid Aggregate, or 248, at one entire Payment; ſo as neither he who pays it, nor he who receives it, may be a loſer.

But that all things may be expoſed clearly to the Readers view, I ſhall here repeat the thing, and ſet down the whole Operation.

	l.
1. The Annual Payment for four years is	62.00
2. The whole Amount of this in four years is	270.32
3. The Aggregate, or four years Payments, that is, four times 62 *l.* is	248.00
4. The Annual Intereſt of the ſaid Aggregate is	14.88

Now the Queſtion is, what is the true time for paying the ſaid Aggregate, or 248, at one entire Payment?

To Anſwer this, I proceed according to the aforeſaid Rule.

1. Out of the whole Amount 270.32
I deduct the Aggregate, or four Annual Payments — 248.00
And the Remainder is — 22.32

2. I multiply this Remainder by 365, thus,

22.32
365
11160
13392
6696
And the Product is 8146.80

3. This Product I divide by the Annual Intereſt of the Aggregate, *viz.* 14.88.

Tariffa

Tariffa for the Diviſor.	
1	1488
2	2976
3	4464
4	5952
5	7440
6	8928
7	10416
8	11904
9	13392
10	14880

14.88) 8146.80 (547.5
7440
7068
5952
11160
10416
7440
7440
0000

And the Quotient 547.5, is an Anſwer to the Queſtion.

That is to ſay, (as before) one year, and 172 days, and a half, before the end of four years.

Or, which is the ſame thing, two years, and 192 days and a half, after the Agreement, muſt the 248 *l.* be paid at one entire Payment; and for the Reaſons aforeſaid, there is no loſs to either *A.* or *B.*

For

For Proof of this,

Let 248 *l.* be put out to Intereſt at 6 *per Cent.* for one year, and 172 days and a half, that is, 547.5 days (which is the Quotient, or the time given from the Payment thereof to the end of the Annuity) and if it make up the whole Amount of the Annuity, *viz.* 270.32, the Operation is right.

Tariffa for the Multiplicand.	
1	00016438356
2	00032876712
3	00049315068
4	00065753424
5	00082191780
6	00098630136
7	00115068492
8	00131506848
9	00147945204
10	00164383560

For Example.

By *Table VI.* the Interest of 1 *l. per Diem* at 6 *per Cent.* is ——— .00016438356

Which being multiplied by ——— 547.5

82191780
115068492
65753424
82191780

Gives a Product of —— .089999999100

Then I make the following *Tariffa*, and proceed to multiply the foregoing Product by 248.

Tariffa for the Multiplicand.	
1	089999999100
2	179999998200
3	269999997300
4	359999996400
5	449999995500
6	539999994600
7	629999993700
8	719999992800
9	809999991900

The

The Product ———	.089999999100
Being multiplied by —	248
	719999992800
	359999996400
	179999998200
Gives ———	22.319999776800
To which add ——	248
The Amount is ——	270.319999776800

Wanting but $\frac{1}{10000}$ (which is not the Hundredth part of a Farthing) of the true Amount of the whole Annuity, *viz.* 270.32, and therefore the Operation is juſt.

And thus may any Queſtion of this nature be reſolved, to a Day, and parts of a Day; for if both theſe laſt Queſtions had been made for Months, the ſame Rule muſt have been obſerved.

For Example.

If *A.* is to pay to *B.* 100 *l. per* Month for five Months, when may he pay the 500 *l.* at one entire Payment, at the Rate of *6 per Cent?* *The*

The Payments being Monthly,

1. The Intereſt of 1*l. per* Month, at 6*per Cent.* by Table V. is — .005
Therefore .005 multiplied by 500, is the Monthly Intereſt of 500*l. viz.* — 500 — 2.500

Therefore,

2. The full Amount of five Monthly Payments of 100*l.* is — 500
The double of the Monthly Intereſt is — 5.000
The whole Amount — 505.000

In purſuance of the aforeſaid General Rule.

l.
1. Out of the whole Amount — 505
Deduct the Aggregate of the ſeveral Payments — 500
The Remainder is — 5

Let

Let therefore 5 be multiplied by 30.416, or the true number of Days that are in one equal Month.

Multiplicand	30.416
Multiplicator	5
Product	152.080

And let that (152.080) be divided by 2.500, or the Monthly Intereſt of 500 *l.* at *6 per Cent.*

Tariffa for the Diviſor.	
1	25
2	50
3	75
4	100
5	125
6	150
7	175
8	200
9	225

2.5) 152.080 (60.832
150
208
200
80
75
50
50
00

The Quotient (60.832) is a true Anſwer in Days.

That

That is to ſay, 60 Days and $\frac{832}{1000}$ of a Day, (which makes two equal Months) before the end of five Months; or (which is all one) three Months after the agreement, or after the firſt day, when the ſaid Debt was growing due, is the juſt time of paying the 500 *l.* at one entire Payment.

For Proof of this.

If 500 *l.* be put out to Intereſt at 6 *per Cent.* for two equal Months, or 60.832 Days, and does give 5 *l.* it makes the 500 *l.* become 505 *l.* which is the full Amount of thoſe five Months Payments, and is a juſt Anſwer to the Queſtion.

But,

	l.
The Monthly Intereſt of 500 *l.* as is aforeſaid, is ——	2.500
The double of this is ——	5.000
This added to 500 *l.* makes —	505.000

And the Operation is exact.

And this I take to be ſufficient for the Reſolution of any Queſtion of this nature.

I ſhall proceed in the next place to Diſcourſe about unequal Payments, at times not equi-diſtant.

A brief

A brief Diſcourſe concerning the Equation of unequal Payments at Times not equi-diſtant.

For Example.

A Merchant owes 500 *l.* to be paid at three ſeveral unequal Payments, *viz.* at the end of four Months 300 *l.* at the end of ſix Months 100 *l.* and at the end of twelve Months 100 *l.* but the Debtor agrees with the Creditor to diſcharge the Debt (*viz.* 500 *l.*) at one entire Payment.

The Queſtion is, at what time this 500 *l.* may be paid, without damage or prejudice to either Creditor or Debtor?

The General Rule is this.

First find the true Amount of each of the Sums, from the firſt day of the Agreement, to the laſt day of Payment, as ſuppoſing them to be forborn to the laſt. Then out of that deduct the Aggregate

of

of the reſpective Payments, and multiply the Remainder, if Annual, by 365; if Monthly, by 30.4166; and the Product divide by the Annual or Monthly Intereſt of the ſaid Aggregate, and the Quotient is the Number of Days from the laſt Day of Payment, accompting backwards.

The Operation is as follows.

Firſt, the length of Time from the day of the Agreement, to the laſt day of Payment, is juſt twelve Months.

So then,

	l.
1. In the firſt place, 300 *l.* payable after 4 Months, and being forborn to the end of 12 Months, has 8 Months Intereſt to accompt for, *viz.* —	12.000
2. In the ſecond place, 100 *l.* payable after 6 Months, and being forborn to the end of 12 Months, has 6 Months Intereſt to accompt for, *viz.*	3.000
3. To theſe Sums adding the —	500.000
The whole Amount is —	515.000

Then,

Then,

	l.
Out of the ſaid Amount ——	515
Deducting the Aggregate of the Sums ——	500
The Remainder is ——	15

And the Proportion is this.

If 2.5 be the Intereſt of 500 *l.* for one Month, how many Months Intereſt will 15 make?

Wherefore divide 15 by 2.5, and the Quotient is the Anſwer to the Queſtion.

Tariffa for the Diviſor.	
1	25
2	50
3	75
4	100
5	125
6	150
7	175
8	200
9	225

The Operation is this.

2.5) 15.0 (6 Months the
15.0 Anſwer.
00.0

That is to ſay, if the ſaid 500 *l.* be paid ſix Months before the end of twelve Months, or (which is all one) at the end of ſix

ſix Months, there will be no loſs or damage either to Creditor or Debtor.

For Proof of this,

1.	In the firſt place, 300 *l.* was due at 4 Months end, and being continued 2 Months longer, the Intereſt thereof for 2 Months is 3 *l.* the whole Amount is	*l.* 303
2.	In the next place, 100 *l.* paid at 6 Months end, is the time it was due	100
3.	In the laſt place, the other 100 *l.* paid 6 Months before the time, there muſt be an abatement made of 3 *l.*	97
	Total Sum	500

So that in the firſt Sum there is an increaſe of 3 *l.* and in the laſt there is a decreaſe of 3 *l.* which are to be ſet one againſt the other; and the whole Amount is the Aggregate of the reſpective Sums, and being paid at the end of 6 Months, makes the Equation juſt 500 *l.*

After

After this manner may any Number of unequal Sums payable at any Number of Times not equi-diſtant, be Equated, and a time ſet for the Payment of the Aggregate; and not only ſo, but if the Debtor *A.* owe to *B.* 100 *l.* *per Annum*, or *per* Month, for any Number of Years or Months, and *A.* and *B.* agreeing together that it ſhall be in the power of *A.* to pay to *B.* the true value of his Pretenſions at the end of any of the Years or Months, it is very Practicable, for the preſent Worth of the whole Amount at the end of any of the Years or Months, reſolves the doubt, and is an Anſwer to the Queſtion.

For Example.

A. owes to *B.* 100 *l.* *per Annum* for five years, and they agree that *A.* ſhall buy it off at the end of any of the four years, for at the end of 5 years nothing leſs than the whole 560 *l.* will pay the Debt.

1. The preſent worth of 560 *l.* (or the whole Amount) at the firſt years end, is —— 451.6129

2. The

2. The preſent worth of 560 *l.* } at the ſecond years end, is — } 474.5762
3. The preſent worth of 560 *l.* } at the third years end, is — } 500.0000
4. The preſent worth of 560 *l.* } at the fourth years end, is — } 528.3018
5. The preſent worth of 560 *l.* } at the fifth years end, is — } 560.0000

Thus I have as briefly as the nature of the thing would permit, explained the *Doctrine of Simple Intereſt*, as likewiſe that of *Annuities*, and *Equation of ſeveral Payments* at *Simple Intereſt*, which is of excellent uſe for 6, 12, or 18 Months, becauſe the difference between *Simple* and *Compound Intereſt* is not material in ſo ſhort a time.

But for as much as the buſineſs of *Annuities*, or *Purchaſes*, for any conſiderable Number of years, does moſt properly and truly belong to the *Doctrine of Compound Intereſt*, I ſhall make that the Subject of the following Book.

THE

THE DOCTRINE OF *COMPOUND INTEREST.*

LIB. II.

CHAP. I.

The Doctrine of Compound Intereſt explained.

COmpound *Intereſt*, or *Intereſt upon Intereſt*, increaſes not only from the Principal, but alſo from the Intereſt, in the manner hereafter expreſt.

That is to ſay,

If 100 *l.* be put out to Intereſt at 6 *per Cent.*

	l.
1. The firſt year there will be due	106.0000
2. The ſecond year that (106 *l.*) is made a Principal, and being put out for a year, becomes	112.3600
3. The third year that (112.360) is made a Principal, and being put out to Intereſt, amounts to	119.1016

And ſo *in infinitum.*

So that the reſpective Amounts for each reſpective year, are ſo many *Geometrical Proportional* Numbers.

For,

As 100 *to* 106, for the firſt year ::
So 106 *to* 112.36, for the ſecond year.

Again,

Again,

As 106 *to* 112.36 :: *So* 112.36 *to* 119.1016, for the third year.

Item,

As 112.36 *to* 119.1016 :: *So* 119.1016 *to* 126.247016, for the fourth year.

&c.

But to the end, that the Ingenious Practitioner may have entire ſatisfaction in the buſineſs of *Intereſt* upon *Intereſt*, it will be neceſſary to make ſome Reflection upon *Geometrical Proportion* and *Progreſſion.*

Reflection upon Geometrical Progreſſion.

If Numbers (how many ſoever they be) contain the one the other by an equal Ratio, then the greateſt of thoſe Numbers is Multiplex of the Powers of the Denomination of that equal Ratio multiplied by the leaſt, according to the multitude of the given Numbers leſs by one.

Let

Let the given Numbers be 2, 6, 18, 54.

Then by the *Hypotheſis*, the firſt multiplied by (3) is equal to the ſecond; and the ſecond multiplied by (3) is equal to the third; and ſo *in infinitum.*

That is to ſay,

First		2 = 2 —— 2
Second	Term	6 = 2 *into* 3 —— 6
Third		18 = 2 *into* 3 *into* 3 —— 18
Fourth		54 = 2 *into* 3 *into* 3 *into* 3 —— 54

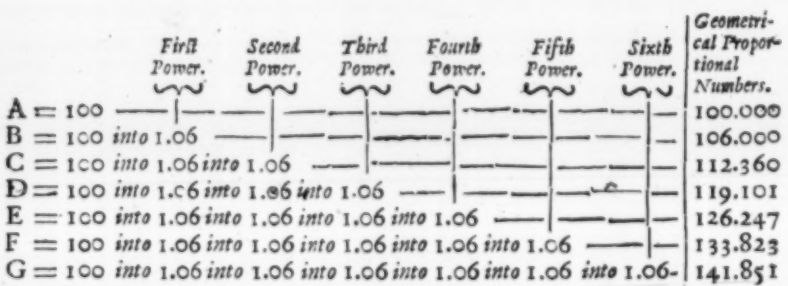
That is to ſay in a Symbolical way,

Let there be any Number of Proportionals, A, B, C, D, E, F, G, and the Ratio *R.*

First	Term	A = A
Second		B = A into R
Third		C = A into R into R
Fourth		D = A into R into R into R
Fifth		E = A into R into R into R into R
Sixth		F = A into R into R into R into R into R
Seventh		G = A into R into R into R into R into R into R

To

To apply this to the preſent purpoſe, let the firſt *Geometrical* Term be (1.) the *Ratio* (.06)



The *Geometrical* Numbers at length are theſe that follow; though there is no neceſſity of making uſe of them all, the difference being indiſcernable.

Years.	Amount at 6 per Cent. Compound Interest.
1	1.06
2	1.1236
3	1.191016
4	1.26247696
5	1.3382255776
6	1.418519112256
7	1.503630258991 36
8	1.593848074530 8416
9	1.689478959002692096
10	1.790847696542853 62176

NOW

NOw for as much as theſe *Geometrical Proportional* Numbers ſwell into a great Number of places, and the Multiplications become tedious, it has been look'd upon as impracticable to find them out by any way, but by the help of the *Logarithms*. But I ſhall endeavour to ſhew a way how it may be very practicable to find out any of theſe Numbers, for any year under 32, without much trouble or difficulty.

For Example.

Let it be demanded to give the Amount of 1 *l.* in eight years, at *6 per Cent.* Compound Intereſt, not having any help of a Table.

The Operation is thus.

Firſt, I Square 1.06, which is 1.1236, and the Product is the Amount in two years.

Secondly,

Secondly, I Square 1.01236, and that gives me the *Proportional Number* anſwering to (4) in the Margin, *viz.* 1.26247, *&c.*

Thirdly, I Square 1.26247, and that gives me the *Proportional Number* anſwering to (8) in the Margin, which was the thing propoſed, *viz.* 1.59384, *&c.*

Now if it had been demanded to find the *Proportional Number* anſwering to (16) in the Margin, it is the Square of 1.59384, *&c.*

And the Square of 1.59384 gives the *Proportional Number* anſwering to (32) in the Margin.

Thus far the Method is clear for all *even* Numbers; but for the *odd* Numbers,

The Rule is this:

Having found the Proportional Number anſwering to the greater half of the given Number in the Margin, Square it, and divide it by the leaſt and

first Proportional Number, and the Quotient is the Number desired.

For Example.

Let it be demanded to find the *Proportional Number* answering to (3) in the Margin, and let (1.06) be the least *Proportional Number.*

Having found 1.1236 to be the *Proportional Number* answering to (2) in the Margin, which (2) is the greater half of (3), I Square 1.1236, and it gives 1.26247, which I divide by 1.06, and the Quotient (1.1910, *&c.*) is the *Proportional Number* desired.

Again,

Let it be demanded to find the *Proportional Number* answering to (5) in the Margin.

Having

Having found the *Proportional Number* anſwering to (3) in the Margin, (which 3 is the greater half of 5) *viz.* 1.1910; the Square thereof, *viz.* 1.4185, being divided by 1.06, the Quotient is the Number deſired, *viz.* 1.3382.

Thus (9) is the greater half of (17), and therefore the *Proportional Number* anſwering to (9) in the Margin being Squared, and that Square divided by 1.06, gives 3.700, for the *Proportional Number* anſwering to (17) in the Margin. And ſo may the *Proportional Number* of any odd Number in the Margin be found out, without the help of Logarithms.

But for as much as exact Tables truly Calculated are moſt ready for uſe, I have with no ſmall Pains and Charge (not Tranſcribed other Mens Tables and Errors, but) carefully and exactly Calculated ſeveral Tables of my own; by the help of which, may eaſily and readily be found out either the *Amount*, or *Preſent Worth* of any Sum, at any Rate of *Compound Intereſt*, and the like for

Annu-

Annuities and *Purchaſes*, after the ſame manner, and in the ſame method as I have done in the firſt Book of this ſmall Treatiſe, for the *Amount* and *Preſent Worth* of either *Principal* Sums, or *Annuities*, at *Simple Intereſt*.

TABLE

TABLE I.

The AMOUNT of **One Pound** put out to Intereſt, and forborn any Number of **Years** under 32, or **Quarters** under 125.

At the Rate of 6 per Cent. Compound Intereſt.

Years and Quarters.	*Amount.*	*Years and Quarters.*	*Amount.*
(0)	1.000000	(2)	1.123600
1	1.014674	1	1.140087
2	1.029563	2	1.156817
3	1.044670	3	1.173792
(1)	1.060000	(3)	1.191016
1	1.075554	1	1.208493
2	1.091336	2	1.226226
3	1.107351	3	1.244219

Years and Quarters.	*Amount.*	*Years and Quarters.*	*Amount.*
(4)	1.262477	(8)	1.593848
1	1.281002	1	1.617236
2	1.299799	2	1.640967
3	1.318872	3	1.665046
(5)	1.338225	(9)	1.689479
1	1.357862	1	1.714270
2	1.377787	2	1.739425
3	1.398005	3	1.764949
(6)	1.418519	(10)	1.790847
1	1.439334	1	1.817126
2	1.460455	2	1.843790
3	1.481885	3	1.870846
(7)	1.503630	(11)	1.898298
1	1.525694	1	1.926154
2	1.548082	2	1.954418
3	1.570798	3	1.983096

Years and Quarters.	Amount.	Years and Quarters.	Amount.
(12)	2.012196	(16)	2.540351
1	2.041723	1	2.577628
2	2.071683	2	2.615452
3	2.102082	3	2.653831
(13)	2.132928	(17)	2.692773
1	2.164226	1	2.732286
2	2.195984	2	2.772379
3	2.228207	3	2.813061
(14)	2.260904	(18)	2.854339
1	2.294080	1	2.896223
2	2.327743	2	2.938722
3	2.361900	3	2.981844
(15)	2.396558	(19)	3.025599
1	2.431725	1	3.069996
2	2.467407	2	3.115045
3	2.503614	3	3.160755

Years and Quarters.	*Amount.*	*Years and Quarters.*	*Amount.*
(20)	3.207135	(24)	4.048934
1	3.254196	1	4.108348
2	3.301948	2	4.168633
3	3.350400	3	4.229803
(21)	3.399564	(25)	4.291870
1	3.449448	1	4.354849
2	3.500065	2	4.418751
3	3.551424	3	4.483591
(22)	3.603537	(26)	4.549383
1	3.656415	1	4.616139
2	3.710069	2	4.683876
3	3.764509	3	4.752607
(23)	3.819749	(27)	4.822346
1	3.875800	1	4.893108
2	3.932673	2	4.964909
3	3.990380	3	5.037762

Years and Quarters.	*Amount.*	*Years and Quarters.*	*Amount.*
(28)	5.111686	(30)	5.743491
1	5.186695	1	5.827770
2	5.262803	2	5.913284
3	5.340029	3	6.000054
(29)	5.418388	(31)	6.088101
1	5.497896		
2	5.578571		
3	5.660431		

TABLE II.

The AMOUNT of **One Pound**, put out to Intereſt for any Number of **Months** under 25.

At the Rate of 6 per Cent. Compound Intereſt.

Months.	*Amount.*	*Months.*	*Amount.*
1	1.004867	13	1.065159
2	1.009758	14	1.070344
3	1.014673	15	1.075554
4	1.019612	16	1.080789
5	1.024575	17	1.086050
6	1.029562	18	1.091337
7	1.034574	19	1.096649
8	1.039610	20	1.101987
9	1.044670	21	1.107351
10	1.049755	22	1.112741
11	1.054865	23	1.118158
12	1.060000	24	1.123600

TABLE III.

The AMOUNT of **One Pound**, put out to Intereſt for any Number of **Days** under 366.

At the Rate of 6 per Cent. Compound Intereſt.

Days.	*Amount.*	*Days.*	*Amount.*
1	1.000160	13	1.002077
2	1.000319	14	1.002237
3	1.000479	15	1.002397
4	1.000639	16	1.002557
5	1.000798	17	1.002717
6	1.000958	18	1.002878
7	1.001118	19	1.003038
8	1.001278	20	1.003198
9	1.001438	21	1.003358
10	1.001598	22	1.003518
11	1.001757	23	1.003678
12	1.001917	24	1.003839

Days.	*Amount.*	*Days.*	*Amount.*
25	1.003998	46	1.007370
26	1.004159	47	1.007531
27	1.004320	48	1.007692
28	1.004480	49	1.007853
29	1.004640	50	1.008014
30	1.004801	51	1.008175
31	1.004961	52	1.008336
32	1.005121	53	1.008497
33	1.005282	54	1.008658
34	1.005442	55	1.008818
35	1.005603	56	1.008980
36	1.005764	57	1.009141
37	1.005924	58	1.009302
38	1.006085	59	1.009463
39	1.006245	60	1.009624
40	1.006406	61	1.009786
41	1.006567	62	1.009947
42	1.006727	63	1.010108
43	1.006888	64	1.010269
44	1.007049	65	1.010431
45	1.007209	66	1.010592

Days.	*Amount.*	*Days.*	*Amount.*
67	1.010753	88	1.014147
68	1.010915	89	1.014309
69	1.011076	90	1.014471
70	1.011237	91	1.014633
71	1.011398	92	1.014795
72	1.011560	93	1.014957
73	1.011722	94	1.015119
74	1.011883	95	1.015281
75	1.012045	96	1.015443
76	1.012207	97	1.015605
77	1.012368	98	1.015768
78	1.012530	99	1.015930
79	1.012691	100	1.016093
80	1.012853	101	1.016254
81	1.013015	102	1.016417
82	1.013177	103	1.016579
83	1.013338	104	1.016741
84	1.013500	105	1.016903
85	1.013662	106	1.017066
86	1.013824	107	1.017228
87	1.013986	108	1.017391

Days.	*Amount.*	*Days.*	*Amount.*
109	1.017553	130	1.020970
110	1.017715	131	1.021133
111	1.017878	132	1.021296
112	1.018040	133	1.021459
113	1.018203	134	1.021622
114	1.018365	135	1.021785
115	1.018528	136	1.021948
116	1.018691	137	1.022112
117	1.018853	138	1.022275
118	1.019016	139	1.022438
119	1.019179	140	1.022601
120	1.019341	141	1.022765
121	1.019504	142	1.022928
122	1.019667	143	1.023091
123	1.019830	144	1.023254
124	1.019992	145	1.023418
125	1.020155	146	1.023581
126	1.020318	147	1.023745
127	1.020481	148	1.023908
128	1.020644	149	1.024072
129	1.020807	150	1.024235

Days.

Days.	*Amount.*	*Days.*	*Amount.*
151	1.024399	172	1.027839
152	1.024562	173	1.028003
153	1.024726	174	1.028167
154	1.024889	175	1.028331
155	1.025053	176	1.028495
156	1.025217	177	1.028659
157	1.025380	178	1.028824
158	1.025544	179	1.028988
159	1.025708	180	1.029152
160	1.025871	181	1.029316
161	1.026035	182	1.029481
162	1.026199	183	1.029645
163	1.026363	184	1.029809
164	1.026527	185	1.029974
165	1.026691	186	1.030138
166	1.026855	187	1.030302
167	1.027018	188	1.030467
168	1.027182	189	1.030632
169	1.027346	190	1.030796
170	1.027510	191	1.030961
171	1.027675	192	1.031126

Days.	*Amount.*	*Days.*	*Amount.*
193	1.031290	214	1.034753
194	1.031455	215	1.034919
195	1.031619	216	1.035084
196	1.031784	217	1.035249
197	1.031949	218	1.035414
198	1.032114	219	1.035580
199	1.032278	220	1.035745
200	1.032443	221	1.035910
201	1.032608	222	1.036076
202	1.032773	223	1.036241
203	1.032938	224	1.036407
204	1.033103	225	1.036572
205	1.033268	226	1.036737
206	1.033433	227	1.036903
207	1.033598	228	1.037069
208	1.033763	229	1.037234
209	1.033928	230	1.037400
210	1.034093	231	1.037565
211	1.034258	232	1.037731
212	1.034423	233	1.037897
213	1.034588	234	1.038062

Days.

Days.	*Amount.*	*Days.*	*Amount.*
235	1.038228	256	1.041715
236	1.038394	257	1.041881
237	1.038560	258	1.042047
238	1.038725	259	1.042214
239	1.038891	260	1.042380
240	1.039057	261	1.042546
241	1.039223	262	1.042713
242	1.039389	263	1.042879
243	1.039555	264	1.043046
244	1.039721	265	1.043212
245	1.039887	266	1.043379
246	1.040053	267	1.043545
247	1.040219	268	1.043712
248	1.040385	269	1.043879
249	1.040551	270	1.044045
250	1.040717	271	1.044212
251	1.040883	272	1.044379
252	1.041050	273	1.044545
253	1.041216	274	1.044712
254	1.041382	275	1.044879
255	1.041548	276	1.045046

Days.	*Amount.*	*Days.*	*Amount.*
277	1.045213	298	1.048723
278	1.045380	299	1.048890
279	1.045546	300	1.049057
280	1.045713	301	1.049225
281	1.045880	302	1.049393
282	1.046047	303	1.049560
283	1.046214	304	1.049728
284	1.046381	305	1.049895
285	1.046548	306	1.050063
286	1.046715	307	1.050230
287	1.046883	308	1.050398
288	1.047050	309	1.050566
289	1.047217	310	1.050734
290	1.047384	311	1.050901
291	1.047551	312	1.051069
292	1.047719	313	1.051237
293	1.047886	314	1.051405
294	1.048053	315	1.051573
295	1.048220	316	1.051741
296	1.048388	317	1.051908
297	1.048555	318	1.052076

Days.	*Amount.*	*Days.*	*Amount.*
319	1.052244	340	1.055778
320	1.052412	341	1.055946
321	1.052580	342	1.056115
322	1.052748	343	1.056284
323	1.052916	344	1.056452
324	1.053084	345	1.056621
325	1.053253	346	1.056790
326	1.053421	347	1.056958
327	1.053589	348	1.057127
328	1.053757	349	1.057296
329	1.053925	350	1.057465
330	1.054094	351	1.057633
331	1.054262	352	1.057802
332	1.054430	353	1.057971
333	1.054599	354	1.058140
334	1.054767	355	1.058309
335	1.054935	356	1.058478
336	1.055104	357	1.058647
337	1.055272	358	1.058816
338	1.055441	359	1.058985
339	1.055609	360	1.059154

Days.	*Amount.*		*Days.*	*Amount.*
361	1.059323		364	1.059830
362	1.059492		365	1.060000
363	1.059661			

TABLE

TABLE IV.

The PRESENT WORTH of **One Pound**, due after any Number of **Years** under 32, or **Quarters** under 125.

At the Rate of 6 per Cent. Compound Intereſt.

Years and Quarters.	*Preſent Worth.*	*Years and Quarters.*	*Preſent Worth.*
(0)	.0000000	(2)	.8899964
1	.9855383	1	.8771256
2	.9712858	2	.8644409
3	.9572394	3	.8519397
(1)	.9433962	(3)	.8396193
1	.9297531	1	.8274770
2	.9163074	2	.8155103
3	.9030560	3	.8037167

Years and Quarters.	*Present Worth.*	*Years and Quarters.*	*Present Worth.*
(4)	.7920936	(8)	.6274123
1	.7806387	1	.6183389
2	.7693493	2	.6093967
3	.7582233	3	.6005839
(5)	.7472581	(9)	.5918984
1	.7364516	1	.5833386
2	.7258013	2	.5749026
3	.7153050	3	.5665885
(6)	.7049605	(10)	.5583947
1	.6947656	1	.5503194
2	.6847182	2	.5423609
3	.6748160	3	.5345175
(7)	.6650571	(11)	.5267875
1	.6554393	1	.5191693
2	.6459606	2	.5116612
3	.6366189	3	.5042618

Years

Years and Quarters.	*Present Worth.*	*Years and Quarters.*	*Present Worth.*
(12)	.4969693	(16)	.3936463
1	.4897823	1	.3879535
2	.4826993	2	.3823430
3	.4757187	3	.3768137
(13)	.4688390	(17)	.3713644
1	.4620588	1	.3659939
2	.4553767	2	.3607010
3	.4487912	3	.3554847
(14)	.4423009	(18)	.3503438
1	.4359045	1	.3452772
2	.4296006	2	.3402839
3	.4233879	3	.3353629
(15)	.4172650	(19)	.3305130
1	.4112307	1	.3257332
2	.4052836	2	.3210226
3	.3994226	3	.3163801

Years

Years and Quarters.	*Present Worth.*	*Years and Quarters.*	*Present Worth.*
(20)	.3118047	(24)	.2469785
1	.3072955	1	.2434068
2	.3028515	2	.2398867
3	.2984718	3	.2364176
(21)	.2941554	(25)	.2329986
1	.2899014	1	.2296291
2	.2857089	2	.2263082
3	.2815771	3	.2230355
(22)	.2775051	(26)	.2198100
1	.2734919	1	.2166312
2	.2695367	2	.2134983
3	.2656388	3	.2104108
(23)	.2617972	(27)	.2073679
1	.2580112	1	.2043690
2	.2542799	2	.2014135
3	.2506026	3	.1985008

Years and Quarters.	*Preſent Worth.*	*Years and Quarters.*	*Preſent Worth.*
(28)	.1956301	(30)	.1741101
1	.1928010	1	.1715924
2	.1900128	2	.1691113
3	.1872648	3	.1666663
(29)	.1845567	(31)	.1642569
1	.1818877		
2	.1792573		
3	.1766649		

TABLE V.

The PRESENT WORTH of **One Pound**, due after the expiration of any Number of **Months** under 25.

At the Rate of 6 per Cent. Compound Interest.

Months.	*Present Worth.*	*Months.*	*Present Worth.*
1	.9951560	13	.9388264
2	.9903355	14	.9342788
3	.9855383	15	.9297531
4	.9807644	16	.9252494
5	.9760136	17	.9207676
6	.9712858	18	.9163074
7	.9665810	19	.9118689
8	.9618988	20	.9074518
9	.9572394	21	.9030561
10	.9526026	22	.8986817
11	.9479884	23	.8943285
12	.9433962	24	.8899964

TABLE VI.

The PRESENT WORTH of **One Pound**, due after the expiration of any Number of **Days** under 366.

At the Rate of 6 per Cent. Compound Intereſt.

Days.	*Preſent Worth.*	*Days.*	*Preſent Worth.*
1	.9998404	13	.9979268
2	.9996808	14	.9977675
3	.9995212	15	.9976083
4	.9993616	16	.9974490
5	.9992021	17	.9972898
6	.9990426	18	.9971306
7	.9988831	19	.9969714
8	.9987237	20	.9968123
9	.9985643	21	.9966532
10	.9984048	22	.9964941
11	.9982455	23	.9963350
12	.9980861	24	.9961759

Days.	*Present Worth.*	*Days.*	*Present Worth.*
25	.9960169	45	.9928419
26	.9958579	46	.9926834
27	.9956990	47	.9925250
28	.9955400	48	.9924665
29	.9953810	49	.9923081
30	.9952222	50	.9921497
31	.9950633	51	.9919914
32	.9949045	52	.9917330
33	.9947457	53	.9915747
34	.9945869	54	.9914165
35	.9944282	55	.9912582
36	.9942694	56	.9911000
37	.9941107	57	.9909418
38	.9939520	58	.9907836
39	.9937934	59	.9906254
40	.9936347	60	.9904673
41	.9934760	61	.9903092
42	.9933175	62	.9901511
43	.9931590	63	.9899930
44	.9930004	64	.9898350

Days.

Days.	*Preſent Worth.*	*Days.*	*Preſent Worth.*
65	.9896769	85	.9865222
66	.9895190	86	.9863647
67	.9893611	87	.9862073
68	.9892031	88	.9860498
69	.9890452	89	.9858924
70	.9888874	90	.9857350
71	.9887297	91	.9855777
72	.9885718	92	.9854204
73	.9884139	93	.9852631
74	.9882561	94	.9851058
75	.9880983	95	.9849486
76	.9879406	96	.9847913
77	.9877829	97	.9846341
78	.9876252	98	.9844770
79	.9874676	99	9843198
80	.9873100	100	.9841627
81	.9871523	101	.9840056
82	.9869948	102	.9838485
83	.9868372	103	.9836914
84	.9866797	104	9835344

Days.	*Present Worth.*	*Days.*	*Present Worth.*
105	.9833774	125	.9802427
106	.9832204	126	.9800862
107	.9830635	127	.9799298
108	.9829066	128	.9797733
109	.9827497	129	.9796169
110	.9825928	130	.9794606
111	.9824359	131	.9793042
112	.9822791	132	.9791479
113	.9821223	133	.9789916
114	.9819656	134	.9788353
115	.9818088	135	.9786791
116	.9816521	136	.9785228
117	.9814954	137	.9783666
118	.9813387	138	.9782105
119	.9811821	139	.9780543
120	.9810254	140	.9778982
121	.9808688	141	.9777421
122	.9807123	142	.9775860
123	.9805557	143	.9774300
124	.9803992	144	.9772739

Days.

Days.	*Preſent Worth.*	*Days.*	*Preſent Worth.*
145	.9771179	165	.9730032
146	.9769620	166	.9738477
147	.9768060	167	.9736922
148	.9766500	168	.9735368
149	.9764942	169	.9733814
150	.9763383	170	.9732260
151	.9761824	171	.9730707
152	.9760266	172	.9729154
153	.9758708	173	.9727600
154	.9757150	174	.9726047
155	.9755593	175	.9724495
156	.9754036	176	.9722942
157	.9752479	177	.9721390
158	.9750922	178	.9719839
159	.9749366	179	.9718287
160	.9747809	180	.9716736
161	.9746253	181	.9715185
162	.9744697	182	.9713634
163	.9743142	183	.9712084
164	.9741587	184	.9710534

Days.	*Present Worth.*	*Days.*	*Present Worth.*
185	.9708983	205	.9678033
186	.9707433	206	.9676489
187	.9705884	207	.9674944
188	.9704334	208	.9673400
189	.9702785	209	.9671855
190	.9701236	210	.9670311
191	.9699688	211	.9668768
192	.9698140	212	.9667224
193	.9696591	213	.9665681
194	.9695044	214	.9664138
195	.9693496	215	.9662596
196	.9691949	216	.9661053
197	.9690400	217	.9659511
198	.9688954	218	.9657969
199	.9687308	219	.9656428
200	.9685762	220	.9654886
201	.9684216	221	.9653345
202	.9682670	222	.9651804
203	.9681124	223	.9650263
204	.9679579	224	.9648723

Days.

Days.	*Preſent Worth.*	*Days.*	*Preſent Worth.*
225	.9647183	245	.9616430
226	.9645643	246	.9614895
227	.9644103	247	.9613360
228	.9642563	248	.9611825
229	.9641024	249	.9610291
230	.9639485	250.	.9608757
231	.9637946	251	.9607223
232	.9636408	252	.9605690
233	.9634870	253	.9604157
234	.9633332	254	.9602623
235	.9631794	255	.9601091
236	.9630256	256	.9599558
237	.9628719	257	.9598026
238	.9627182	258	.9596494
239	.9625645	259	.9594962
240	.9624109	260	.9593430
241	.9622573	261	.9591899
242	.9621037	262	.9590369
243	.9619500	263	.9588837
244	.9617965	264	.9587306

Days.	*Present Worth.*	*Days.*	*Present Worth.*
265	.9585775	285	.9555219
266	.9584245	286	.9553693
267	.9582715	287	.9552168
268	.9581185	288	.9550644
269	.9579656	289	.9549119
270	9578127	290	.9547595
271	.9576598	291	.9546071
272	.9575069	292	.9544547
273	.9573541	293	.9543023
274	.9572013	294	.9541500
275	.9570485	295	.9539977
276	.9568957	296	.9538454
277	.9567430	297	.9536932
278	.9565902	298	.9535409
279	.9564375	299	.9533887
280	.9562849	300	.9532365
281	.9561322	301	.9530843
282	.9559796	302	.9529322
283	.9558270	303	.9527800
284	.9556744	304	.9526280

Days.	*Preſent Worth.*	*Days.*	*Preſent Worth.*
305	.9524759	325	.9494397
306	.9523239	326	.9492881
307	.9521719	327	.9491366
308	.9520199	328	.9489851
309	.9518679	329	.9488336
310	.9517160	330	.9486822
311	.9515640	331	.9485307
312	.9514121	332	.9483793
313	.9512603	333	.9482279
314	.9511084	334	.9480766
315	.9509566	335	.9479251
316	.9508048	336	.9477739
317	.9506530	337	.9476226
318	.9505013	338	.9474713
319	.9503495	339	.9473201
320	.9501978	340	.9471689
321	.9500462	341	.9470177
322	.9498945	342	.9468665
323	.9497429	343	.9467154
324	.9495913	344	.9465642

Days.	*Present Worth.*	*Days.*	*Present Worth.*
345	.9464131	356	.9447526
346	.9462621	357	.9446018
347	.9461110	358	.9444511
348	.9459600	359	.9443003
349	.9458090	360	.9441495
350	.9456580	361	.9439988
351	.9455071	362	.9438481
352	.9453561	363	.9436975
353	.9452052	364	.9435468
354	.9450543	365	.9433962
355	.9449035		

TABLE

TABLE VII.

The PRESENT WORTH of **One Pound** Annuity, to continue any Number of **Years** under 32, and payable by Yearly Payments, at 5, 6, 7, 8, 9, and 10 *per Cent.* Compound Intereſt.

The PRESENT WORTH of One Pound Annuity, Comp. Int. At

Years.	5 *per Cent.*	6 *per Cent.*	7 *per Cent.*
1	0.95238	0.94339	0.93457
2	1.85941	1.83339	1.80801
3	2.72324	2.67301	2.62431
4	3.54595	3.46510	3.38721
5	4.32947	4.21236	4.10019
6	5.07569	4.91732	4.76653
7	5.78637	5.58238	5.38928
8	6.46321	6.20979	5.97129
9	7.10782	6.80169	6.51523
10	7.72173	7.36008	7.02358
11	8.30641	7.88687	7.49867
12	8.86325	8.38384	7.94268
13	9.39357	8.85268	8.35765
14	9.89864	9.29498	8.74546
15	10.37965	9.71224	9.10791
16	10.83776	10.10589	9.44664

The PRESENT WORTH of **One Pound** Annuity, Comp. Int.

At

Years.	8 *per Cent.*	9 *per Cent.*	10 *per Cent.*
1	0.92592	0.91743	0.90909
2	1.78326	1.75911	1.73553
3	2.57709	2.53129	2.48685
4	3.31212	3.23971	3.16986
5	3.99270	3.88965	3.79078
6	4.62287	4.48591	4.35526
7	5.20636	5.03295	4.86841
8	5.74663	5.53481	5.33492
9	6.24688	5.99524	5.75902
10	6.71008	6.41765	6.14456
11	7.13896	6.80519	6.49506
12	7.53607	7.16072	6.81369
13	7.90377	7.48690	7.10335
14	8.24423	7.78614	7.36668
15	8.55947	8.06068	7.60608
16	8.85136	8.31255	7.82371

The PRESENT WORTH of One Pound Annuity, Comp. Int.

At

Years.	5 *per Cent.*	6 *per Cent.*	7 *per Cent.*
17	11.27406	10.47725	9.76322
18	11.68958	10.82760	10.05908
19	12.08532	11.15811	10.33559
20	12.46220	11.46992	10.59401
21	12.82115	11.76407	10.83552
22	13.16300	12.04158	11.06124
23	13.48857	12.30337	11.27218
24	13.79864	12.55035	11.46933
25	14.09394	12.78335	11.65358
26	14.37518	13.00316	11.82577
27	14.64303	13.21053	11.98671
28	14.89812	13.40616	12.13711
29	15.14107	13.59072	12.27767
30	15.37245	13.76483	12.40904
31	15.59283	13.92908	12.53187

The PRESENT WORTH of One Pound Annuity, Comp. Int.

At

Years.	8 *per Cent.*	9 *per Cent.*	10 *per Cent.*
17	9.12163	8.54363	8.02155
18	9.37188	8.75562	8.20141
19	9.60359	8.95011	8.36492
20	9.81814	9.12854	8.51356
21	10.01680	9.29224	8.64869
22	10.20074	9.44242	8.77154
23	10.37105	9.58020	8.88322
24	10.52875	9.70661	8.98474
25	10.67477	9.82258	9.07704
26	10.80997	9.92897	9.16094
27	10.93516	10.02658	9.23722
28	11.05107	10.11613	9.30656
29	11.15840	10.19828	9.36960
30	11.25778	10.27365	9.42691
31	11.34981	10.34284	9.47901

TABLE VIII.

Shewing what Annuity, to continue any Number of **Years** under 32, and payable by Yearly Payments, **One Pound** will Purchaſe, at the Rate of 5, 6, 7, 8, 9, and 10 *per Cent.* Compound Intereſt.

A TABLE ſhewing what Annuity **One Pound** will Purchaſe, at ſeveral Rates of Comp. Int.

Years.	5 *per Cent.*	6 *per Cent.*	7 *per Cent.*
1	1.05000	1.06000	1.07000
2	.53780	.54543	.55309
3	.36720	.37411	.38105
4	.28209	.28859	.29519
5	.23097	.23739	.24389
6	.19701	.20336	.20979
7	.17281	.17913	.18555
8	.15472	.16103	.16746
9	.14069	.14702	.15348
10	.12950	.13586	.14237
11	.12038	.12679	.13335
12	.11282	.11927	.12590
13	.10645	.11296	.11965
14	.10102	.10758	.11434
15	.09634	.10296	.10979
16	.09226	.09895	.10585

A TABLE ſhewing what Annuity **One Pound** will Purchaſe, at ſeveral Rates of Comp. Int.

Years.	8 *per Cent.*	9 *per Cent.*	10 *per Cent.*
1	1.08000	1.09000	1.10000
2	.56076	.56846	.57619
3	.38803	.39505	.40211
4	.30192	.30866	.31547
5	.25045	.25709	.26379
6	.21631	.22291	.22960
7	.19207	.19869	.20545
8	.17401	.18067	.18744
9	.16007	.16679	.17364
10	.14902	.15582	.16274
11	.14007	.14694	.15396
12	.13269	.13965	.14676
13	.12652	.13356	.14077
14	.12129	.12843	.13574
15	.11682	.12405	.13147
16	.11298	.12029	.12781

A TABLE ſhewing what Annuity **One Pound** will Purchaſe, at ſeveral Rates of Comp. Int.

Years.	5 *per Cent.*	6 *per Cent.*	7 *per Cent.*
17	.08869	.09544	.10242
18	.08554	.09235	.09941
19	.08274	.08962	.09675
20	.08024	.08718	.09439
21	.07799	.08500	.09228
22	.07597	.08304	.09040
23	.07413	.08127	.08871
24	.07247	.07967	.08718
25	.07095	.07822	.08581
26	.06956	.07690	.08456
27	.06829	.07569	.08342
28	.06712	.07459	.08239
29	.06604	.07357	.08144
30	.06506	.07264	.08058
31	.06418	.07181	.07983

The

A TABLE ſhewing what Annuity **One Pound** will Purchaſe, at ſeveral Rates of Comp. Int.

Years.	8 *per Cent.*	9 *per Cent.*	10 *per Cent.*
17	.10962	.11704	.12466
18	.10670	.11421	.12192
19	.10412	.11173	.11954
20	.10184	.10954	.11745
21	.09983	.10761	.11562
22	.09803	.10590	.11400
23	.09642	.10438	.11257
24	.09497	.10302	.11126
25	.09367	.10180	.11016
26	.09250	.10071	.10915
27	.09144	.09973	.10825
28	.09048	.09885	.10745
29	.08961	.09805	.10672
30	.08882	.09733	.10607
31	.08814	.09670	.10550

TABLE

TABLE

The PRESENT WORTH of any 41, 51, 61, 71, 81, or PRESENT WORTH

At 5, 6, 8, and 10 per

Years to be Purchased.	*At 5 per Cent. The Purchase of Freehold Land.*			*At 6 per Cent. The Purchase of Copyhold Land, or Leases of Land.*		
	Years.	*Qua.*	*Mo.*	*Years.*	*Qua.*	*Mo.*
21	12	3	1	11	3	0
31	15	3	1	13	3	2
41	17	0	1	15	0	1
51	18	1	0	15	3	0
61	18	3	2	16	2	0
71	19	1	1	16	1	2
81	19	2	1	16	2	0
91	19	3	0	16	2	0
Fee Simple.	20	0	0	16	2	2

IX.

Leaſe, or **Annuity**, for 21, 31, 91 **Years**; as likewiſe the of the **Fee Simple.**

Cent. *Compound Intereſt.*

Years to be Purchaſed.	*At 8 per Cent. The Purchaſe of very good Houſes.*			*At 10 per Cent. The Purchaſe of Leaſes of ordinary Houſes.*		
	Years.	*Qua.*	*Mo.*	*Years.*	*Qua.*	*Mo.*
21	10	0	0	8	3	2
31	11	1	1	9	3	0
41	11	3	2	9	3	2
51	12	1	0	9	3	2
61	12	1	1	10	0	0
71	12	1	2	10	0	0
81	12	2.	0	10	0	0
91	12	2	0	10	0	0
Fee Simple.	12	2	0	10	0	0

CHAP. II.

The Uſe of the preceding TABLES *of Compound Intereſt.*

HAving with all imaginable care framed and calculated divers Tables relating to *Compound Intereſt*, it will be needful to apply the ſame to Uſe and Practice.

The Uſe of the firſt TABLE, ſhown in Two Examples.

Example 1.

Suppoſe it be demanded to give the *Amount* of 136*l.* 15*s.* 6*d.* being forborn 20 years, at 6 *per Cent.* Compound Intereſt.

Direction.

Direction.

The given Sum muſt firſt be reduced by the firſt Table of the firſt Book, and made 136.775, and then multiplied by the Number in the firſt Table anſwering to (20), in the Margin of *pag.* 144, *viz.* 3.20713.

Tariffa for the Multiplicand.	
1	136775
2	273550
3	410325
4	547100
5	683875
6	820650
7	957425
8	1094200
9	1230975

The

The Operation may be contracted, according to the Rule in the *Introduction.*

Multiplicand	136.775
Multiplicator	3.20713
	41 ....
	136 ...
	9574 ..
	00000 .
	273550
	4103250
Product	438.6552

The Product 438.6552 is the true Answer, and being reduced by the fifteenth Table of the first Book, makes 438 *l.* 13 *s.* 1 *d.* 1 *q.*

Example 2.

Suppose it be demanded to give the *Amount* of the aforesaid Sum in 20 Years and 3 Quarters.

Direction.

Direction.

Multiply the aforeſaid Sum of 136.775, by the Number which anſwers to 20 Years and 3 Quarters, *viz.* 3.35040.

The Operation may be contracted as before.

Multiplicand	136.775
Multiplicator	3.35040
	547 ...
	68387 ..
	410325 .
Product	458.2509

The Product 458.2509 is the Anſwer to the Queſtion, and being reduced by the fifteenth Table of the firſt Book, makes 458 *l.* 5 *s.* more by $\frac{22}{100}$ (or Ninety Two Hundred parts) of a Farthing.

The

The Uſe of the ſecond TABLE.

Suppoſe it be deſired to know the *Amount* of 42 *l.* in 7 Months, at *6 per Cent.* Compound Intereſt.

Direction.

Seek the Number in *Table II.* anſwering to (7) in the Margin, *viz.* 1.034574, and multiply it by 42, and the Product is the Anſwer.

Multiplicand —— ——	1.034574
Multiplicator —— ——	42
	2069148
	4138296
Product ——————	43.452108

Which Product being reduced is 43 *l.* 9*s.* 2 *q.* more by $\frac{8}{100}$ (or Two Hundred parts) of a Farthing.

The

The Uſe of the third TABLE.

Suppoſe it be demanded to find the *Amount* of 42 *l.* in 104 Days.

Direction.

Find the Number in *Table III.* anſwering to (104) in the Margin, *viz.* 1.016741, and multiply that by 42, and the Product is the Anſwer.

Multiplicand ——	1.016741
Multiplicator ——	42
	2033482
	4066964
Product ——	42.703122

Which Product being reduced, makes 42 *l.* 14 *s.* 2 *q.* more by $\frac{22}{100}$ (or Ninety Nine Hundred parts) of a Farthing.

The

The Uſe of the fourth TABLE.

Let it be demanded to find the *Preſent Worth* of 438 *l.* 13 *s.* 1 *d.* 1 *q.* due and payable after the expiration of 20 Years, at *6 per Cent.* Compound Intereſt.

Direction.

The given Sum being converted into a Decimal Number is 438.655205, then find the Number in *Table IV.* anſwering to (20) in the Margin, *viz.* .3118047, and multiplying one by another, the Product is the Anſwer.

Tariffa for the Multiplicand.	
1	4386552
2	8773104
3	13159656
4	17546208
5	21932760
6	26319312
7	30705864
8	35092416
9	39478968

And

And the Operation may be contracted thus to ſeven places, by the Rule in the *Introduction.*

Multiplicand ——— 438.6552
Multiplicator ——— .3118047

3	.....
17	.....
3509	.....
4386	....
43865	...
1315965	..
Product ——— 136.7747	

The Product 136.7747 is a manifeſt Proof of the truth of the Operation in the firſt Example of the uſe of the firſt Table, *pag.* 186. there being not ſo much as the Hundredth part of a Farthing difference.

The Use of the fifth TABLE.

Let the *Present Worth* of 43.452108 *l.* due after the expiration of 7 Months, be sought, according to the Rate of *6 per Cent.* Compound Interest.

Tariffa for the Multiplicand.	
1	43452108
2	86904216
3	130356324
4	173808432
5	217260540
6	260712648
7	304164756
8	347616864
9	391068972

The

The Operation contracted by the Rule in the *Introduction.*

Multiplicand ———	43.452108
Multiplicator ———	.966581
	4
	347
	2172
	26071
	260712
	3910689
Product ——	41.99997

Which Product 41.99997 is a clear and manifeſt Proof of the truth of the Operation in the uſe of the ſecond Table, *pag.* 190.

The Uſe of the ſixth TABLE.

Let it be required to find the *Preſent Worth* of 42.703122 *l.* after the end of 104 Days, at the Rate of *6 per Cent.* Compound Intereſt.

Tariffa

Tariffa for the Multiplicand.	
1	42703122
2	85406244
3	128109366
4	170812488
5	213515610
6	256218732
7	298921854
8	341624976
9	384328098

The Operation contracted by the Rule in the *Introduction*.

Multiplicand —— 42.703122
Multiplicator —— .9835344

1.....
17.....
128.....
2135.....
12810....
341624...
3843280..

Product —— 41.99997

Which

Which Product 41.99997, is a clear and manifeſt Proof of the truth of the Operation in the Example, calculated to ſhew the uſe of the third Table, *pag.* 191.

The Uſe of the ſeventh and ninth TABLES.

Let it be required to find the *Preſent Worth* of an *Annuity* of 56 *l.* to continue 21 years, and payable by yearly payments, at the Rate of *6 per Cent.* Compound Intereſt.

Direction.

Firſt find the Number in *Table VII.* anſwering to (21) in the Margin, which is 11.76407; then multiply it by 56, without a *Tariffa,* becauſe there are but two places in the *Multiplicator,* and the Product is the Anſwer.

Multi-

Multiplicand ——	11.76407
Multiplicator ——	56
	7058442
	5882035
Product ——	658.78792

Which Product being reduced by the fifteenth Table of the first Book, makes *657 l. 15 s. 9 d.* more by $\frac{42}{100}$ (or Forty Hundred parts) of a Farthing, which agrees with Mr. *Kersey*'s Example, in his *Appendix* to Mr. *Wingate*'s *Arithmetick*, pag. 412. only this Calculation is more exact than his, and somewhat nearer to the truth.

The Use of the eighth TABLE.

Let it be demanded what *Annuity*, to continue 14 years, and payable by yearly payments, will *320 l.* buy, allowing *6 per Cent.* Compound Interest.

Direction.

Direction.

Seek in the Margin of *Table VIII.* the Number (14), and the Number anſwering to it, under the Title of *6 per Cent. viz.* .10758; which multiply by 320, and the Product is the Anſwer.

The Operation.

Multiplicand ———	.10758
Multiplicator ———	320
	215160
	32274
Product ———	34.42560

Which Product 34.42560, being reduced by the fifteenth Table of the firſt Book, makes 34 *l.* 8 *s.* 6 *d.* more by $\frac{12}{100}$ (or Fifty Seven Hundred parts) of a Farthing.

A

A farther Uſe of the ſeventh TABLE.

To convert a preſent *Sum* or *Fine* into an *Annual Rent*; or on the contrary, to bring down an *Annual Rent* by a preſent *Sum* or *Fine*.

Example 1.

A Landlord Lets a Leaſe of a Houſe and Land for 21 years, and is to have 100 *l.* for that Leaſe, and a yearly payment of 30 *l.* what Fine or preſent Money muſt the Tenant give, to bring down the Rent from 30 *l.* to 10 *l. per Annum*, allowing *6 per Cent.* Compound Intereſt?

Direction.

Firſt find the difference of 10 *l.* and 30 *l.* which is 20 *l.* then find by *Table VII. pag.* 176. what an *Annuity* of 1 *l.* to continue 21 years, is worth in preſent Money, which is 11.76407 *l.* then multiply 11.76407 by 20, and the Product

Product gives the *Preſent Worth* of 20*l.* *per Annum* for 21 years.

The Operation.

Multiplicand ———	11.76407
Multiplicator ———	20
Product ———————	235.28140

Which Product 235.28140 being reduced, is 235*l.* 5*s.* 7*d.* 2*q.* more by $\frac{14}{100}$ (or Fourteen Hundred parts) of a Farthing.

Example 2.

A Landlord demands a Fine, or preſent Sum, for a Leaſe of 127*l.* *per Annum*, to continue 7 years; what is the Sum, allowing *6 per Cent.* Compound Intereſt?

Direction.

Find by *Table VII.* the *Preſent Worth* of 1*l.* *Annuity* for 7 years, at *6 per Cent.* *viz.* 5.58238, which multiply by 127, and the Product is the Anſwer.

The Operation.

Multiplicand	5.58238
Multiplicator	127
	3907666
	1116476
	558238
Product	708.96226

Which Product 708.96226 being reduced by the fifteenth Table of the firſt Book, makes the juſt Sum of 708 *l.* 19 *s.* 2 *d.* 3 *q.* more by $\frac{22}{100}$ (or Seventy Seven Hundred parts) of a Farthing.

And here the Reader is deſired to take notice of a printed Sheet ſold in *weſtminſter-Hall*, Entituled, "*A Preſident for* "*Purchaſers*, &c. *Or* Anatociſme (*commonly* "*called* Compound Intereſt) *made eaſie*, "&c. *Computed by* W. Leybourn. The principal Table in this Sheet is printed from a Copper Plate, but ſo full of groſs Errors and miſtakes, that it is not fit to be uſed: For

In

In this laſt Example, that Table makes the Sum but 706 *l.* 16 *s.* 6 *d.* which the Table of this Book makes 708 *l.* 19 *s.* 2 *d.* 3 *q.* and more, (which Sum agrees with Mr. *Clavel*'s Tables). But in very many places there is no leſs than 4, 5, 6, and 10 Pound miſtaken, which muſt needs deceive all thoſe, who do in the leaſt rely upon, or give any credit to it.

So that the AUTHOR of this little Book hopes, That the manifold Errors in the Calculations of other Writers, will occaſion a more kind acceptance of his more than ordinary care and diligence in all the foregoing Tables; if not,

—— *Redit Labor actus in Orbem.*

Μονῷ τῷ Θεῷ Δόξα.

FINIS.

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